1965 ANNUAL REPORT

DEPARTMENT OF DEFENSE
OFFICE OF CIVIL DEFENSE

DEPARTMENT OF DEFENSE

OFFICE OF THE SECRETARY OF THE ARMY

Annual Report

of the

Office of Civil Defense

For Fiscal Year

1965

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price 45 cents

Letter of Transmittal

THE SECRETARY OF DEFENSE

WASHINGTON

January 28, 1966

DEAR MR. PRESIDENT:

In compliance with section 406 of the Federal Civil Defense Act of 1950 and section 5 of Executive Order 10952 of July 20, 1961, I submit herewith the fourth annual report of the Office of Civil Defense, covering civil defense functions assigned to me.

Sincerely,

Robert S. McNamara

ROBERT S. MCNAMARA

THE PRESIDENT
THE WHITE HOUSE

Letter of Transmittal

THE SECRETARY OF THE ARMY

WASHINGTON

December 27, 1965

DEAR MR. SECRETARY:

Submitted by the Director of Civil Defense, Mr. William P. Durkee, and transmitted herewith is the fourth annual report of the Office of Civil Defense.

Sincerely,

Stanley Resor

STANLEY R. RESOR

THE SECRETARY OF DEFENSE
DEPARTMENT OF DEFENSE

CONTENTS

	Page
Letter of Transmittal to the President	III
Letter of Transmittal to the Secretary of Defense	IV
PART I—Introductory Statement	1
PART II—Program Development and Support	5
Shelter Space Perspective	5
Organization and Management	6
Federal Support	9
Department of Defense Resources	9
Military Support	11
Federal Agency Coordination	12
State and Local Perspective	13
Financial Summary	17
PART III—Nationwide Fallout Shelter System	19
Operational Accomplishments	19
Survey Operations	20
Marking and Licensing Operations	23
Stocking Operations	23
Expansion Techniques	27
Architectural and Engineering Design	27
Special Surveys	32
Shelter Ventilation	33
Planned Shelter Usage	33
Protective Structures	36
Professional and Technical Support	40
PART IV—Complementary Civil Defense Systems	45
Civil Defense Alterting and Warning	45
Federal Warning Systems	45
State and Local Warning Systems	49
Communications	49
Operational Communications	49
Emergency Broadcast System	51
Support of State and Local Systems	53
Radiological Monitoring and Reporting	53
Operational Status	53
Training and Technical Guidance	56
Instrument Procurement and Distribution	56
Damage Assessment	57
Plans and Systems	58
Survival Resources and Requirements	59
Data Base Operations	59

Page

PART V—Federal Assistance Programs and Activities 61
Technical Assistance and Guidance 61
Training and Education 64
Professional and Technical Training 64
Public Education 68
Rural Civil Defense 70
Training Support Activities 71
Financial Assistance 72
Surplus Property 76
Emergency Supplies and Equipment Inventory 78

PART VI—Research 79
Shelter 80
Support Systems 83
Postattack 84
Systems Evaluation 85

PART VII—Supporting Activities 87
Public Information 87
Technical Liaison 91
Industrial Participation 91
Labor Support 94
International Activities 95
The American National Red Cross 97
Advisory Committee on Shelters 97

APPENDIXES

1. Department of Defense Directive No. 3025.10, March 29, 1965, Subject: Military Support of Civil Defense 99
2. Description of Public Fallout Shelter Supplies 111
3. Slanting Techniques 119
4. Department of Defense Instruction No. 5030.21, Subject: Advisory Committee on the Design and Construction of Public Fallout Shelters 123
5. Chemical and Biological Defense 127

ILLUSTRATIONS

1. OCD Organization Chart 7
2. OCD Regions 8
3. Summary of Shelter Stocking Operations, end Fiscal Year 1965 . . . 27
4. Miami Coral Park Senior High School, Miami, Fla. 28
5. Incorporation of Fallout Shelter in a Federal Office Building 30, 31
6. Radio Station WGH, an Emergency Broadcast System Station, Newport News, Va. 38
7. National Warning System (NAWAS) 46
8. Warning Flow Chart for the Continental United States 47
9. Civil Defense Telephone and Teletype System (NACOM 1) 50
10. Civil Defense Radio System (NACOM 2) 52
11. Growth in Number of Federal, State, and Local Radiological Fallout Monitoring Stations 54

Page

12. Procurement of Radiological Defense Instruments 57
13. Instruction in Progress at OCD Staff College 65
14. Training of Shelter Management Instructors in Progress 67
15. Fallout Shelter Ventilation Unit in Operation 82
16. Fire Detection Instrument 84
17. A Scene From the Film *Though the Earth Be Moved* 88
18. Public Fallout Shelter Food Items 112
19. Public Fallout Shelter Sanitation Kit SK 4 (designed to serve 50 persons) 113
20. Public Fallout Shelter Medical Kit A (designed to serve 50–65 persons) 115
21. Public Fallout Shelter Radiation Kit CD V–77–1 116
22. Public Fallout Shelter Water Container With Polyethylene Liner . . 117
23. Examples of Slanting Techniques 121

TABLES

1. Financial Summary for Fiscal Year 1965 17
2. Summary of Progress in Public Fallout Shelter Program, Fiscal Year 1965 19
3. Shelter Space Located, Protection Factor of 40 or Higher, Fiscal Year 1965 20
4. Shelter Space Stocked With General Shelter Supplies 25
5. Number of State and Local Emergency Operating Centers, end Fiscal Year 1965 39
6. Fiscal Year 1965 Contributions to State and Local Governments for Supplies, Equipment, Training, and Emergency Operating Centers . 73
7. Fiscal Year 1965 Federal Contributions for State and Local Civil Defense Personnel and Administrative Expenses 75
8. Federal Surplus Property Transferred to State and Local Governments for Civil Defense Purposes 77
9. Research Funds Programed, Committed, and Obligated, Fiscal Year 1965 Appropriations 81

INTRODUCTORY STATEMENT

Three major programs . . . constitute our general nuclear war forces: The Strategic Offensive Forces, the Continental Air and Missile Defense Forces, and Civil Defense . . .

This statement by the Secretary of Defense, presented to the Armed Services Committee of the House of Representatives in February 1965, defined the position of civil defense in the total defense structure. For the first time, the Civil Defense Program was ranked with the Strategic Offensive Forces and the Strategic Defensive Forces as one of the major programs of the general nuclear war forces.

The Secretary of Defense further stated:

The strategic objectives of our general nuclear war forces are:

1. To deter a deliberate nuclear attack upon the United States and its allies by maintaining a clear and convincing capability to inflict unacceptable damage on an attacker, even were that attacker to strike first.

2. In the event such a war should nevertheless occur, to limit damage to our populations and industrial capacities.

The first of these capabilities (required to deter potential aggressors) we call assured destruction; i.e., the capability to destroy the aggressor as a viable society, even after a well-planned and executed surprise attack on our forces. The second capability we call damage limitation; i.e., the capability to reduce the weight of the enemy attack by both offensive and defensive measures and to provide a degree of protection for the population against the effects of nuclear detonations.

. . . . . .

The ultimate deterrent to a deliberate nuclear attack on the United States and its allies is our clear and unmistakable ability to destroy an aggressor as a viable society, even after our forces have been attacked. But if deterrence fails, whether by accident or miscalculation, it is essential that forces be available to limit the damage of such an attack to ourselves and our allies . . . .

. . . . . .

. . . analysis clearly demonstrates the distinct utility of a nationwide fallout shelter program in reducing fatalities, at all levels of attack. . . .

The nationwide fallout shelter system.—Major facts on the development of this system during fiscal year 1965 included:

1. Location of fallout shelter space for 14.2 million persons in more than 11,000 facilities.—This extended nationwide coverage to approximately 136 million persons in more than 155,000 facilities.

2. Licensing of more than 11,000 facilities.—This increased the

number of licensed facilities to nearly 82,000 having aggregate shelter space for more than 77 million persons.

3. Marking of more than 8,000 facilities.—This increased the number of facilities marked to nearly 88,000, with a total capacity to protect nearly 76 million persons.

4. Stocking of more than 17,000 facilities.—This increased to 63,000 the number of facilities stocked with sufficient supplies to accommodate 56.2 million persons for 8 days, or 33.8 million for 14 days.

5. Advancement of economical techniques to expand the system.—This included the use of architectural and engineering design or "slanting," special surveys to locate shelter space in small buildings and to evaluate shelter space in homes, and preparations for shelter ventilation.

6. Community shelter planning.—Community shelter projects were conducted in 57 communities throughout the United States to produce tested management, training, and administrative information for dissemination to all communities for use in suitable shelter planning.

7. Provision of professional and technical support.—Approximately 2,500 architects and engineers were certified as fallout shelter analysts, making a total of more than 9,200 qualified analysts. Workshops for 540 analysts were held, and architectural and engineering development centers were established at 8 universities.

8. Establishment of State and local emergency operating centers.—More than 1,900 centers were operational or being prepared. Of this number, more than 600 had been provided Federal matching funds for construction and equipment.

Complementary systems.—Among the major improvements in the warning, communications, radiological monitoring, and damage assessment systems were the following:

1. The National Warning System (NAWAS) was extended to Alaska and strengthened by increasing the number of warning points from 621 to 685; NAWAS was realined from 9 to 3 warning centers: one primary and two alternate centers; and agreements for providing Federal funds for fallout protection were extended to include 232 warning points.

2. The Civil Defense Telephone and Teletype System was improved by installing separate circuits between OCD regional offices and State offices to permit simultaneous voice and teletype transmissions.

3. Of 2,361 broadcast stations in the Emergency Broadcast System, 540 selected radio stations participated in the protection program to assure their operational capability in emergencies. This was an increase of 331, and 219 had completed construction for fallout protection by the end of the year.

4. The radiological monitoring network was strengthened by the

addition of more than 6,900 monitoring stations, making a total of more than 55,000 operational stations. More than 15,600 public fallout shelters were supplied with radiation monitoring kits, making these kits available in more than 67,600 shelters having a rated capacity for more than 61.5 million persons.

5. The damage assessment system was strengthened by updating and expanding the available data to include additional information on resources essential for survival.

Federal assistance.—Major achievements in helping State and local governments included the following:

1. All States and approximately 4,300 political subdivisions had civil defense organizations participating in OCD assistance programs. These organizations were staffed by approximately 5,400 paid civil defense personnel, and about 2.7 million State and local government personnel and volunteers had civil defense assignments.

2. Key civil defense personnel and instructors trained at OCD schools totaled 3,447, making a cumulative total of 25,838 so trained since fiscal year 1960. Through the Civil Defense University Extension Program (CDUEP), 32,203 key State and local officials were briefed on civil defense, increasing the total to more than 57,000.

3. Radiological monitors trained in fiscal year 1965 by the Army, in the CDUEP, and through the Civil Defense Adult Education Program (CDAEP) totaled 20,534, including 4,074 instructors.

4. Shelter managers trained in fiscal year 1965 through the CDUEP totaled 9,485, including 3,390 instructors.

5. In public education, approximately 277,000 persons were trained in *Personal and Family Survival*, making a cumulative total of more than 1.1 million; about 832,000 persons were trained in medical self-help, making a cumulative total of approximately 2.5 million.

6. Rural civil defense information and education programs, operated in each State and in Puerto Rico, included civil defense training sessions for nearly 20,000 local leaders who informed nearly 890,000 persons about civil defense. More than 10,000 television and radio programs and nearly 4,000 exhibits featuring the application of civil defense preparation to rural communities were shown to rural audiences, and nearly 2.6 million copies of civil defense publications on this subject were sent to people in rural areas.

Research and various supporting activities.—These activities strengthened civil defense in the following ways:

1. Research continued to improve civil defense readiness by increasing the capability of men and equipment for civil defense operations. For example, further research and development on a prototype packaged ventilation kit resulted in substantially reducing its previously estimated cost; shelter occupancy tests produced information for

training shelter management personnel; a model automatic radiological monitoring system was developed for evaluation; advancement was made in the detection and control of fires; and data were contributed for policy and operational decisions involving all aspects of civil defense.

2. Public information provided for dissemination of essential civil defense information in times of emergency and explanatory information in peacetime; *Civil Defense 1965* summarized the conclusions of the Department of Defense on the role of civil defense and defined the direction and scope of the nationwide civil defense program; 9 new motion pictures on civil defense were released; kits of appropriate spot announcements were released to radio and television stations; and approximately 11,000 newspapers and periodicals were provided civil defense information. In addition, a campaign was started to gain fuller use of the resources of local units of national organizations in community civil defense.

3. Liaison with industry accelerated the distribution of civil defense information to industrial employees and helped expand the nationwide fallout shelter system in industrial facilities.

4. Liaison with labor organizations accelerated their support of civil defense at all levels of government and resulted in the development of training courses for about 13.5 million members and their families.

5. Participation in international civil defense activities of the North Atlantic Treaty Organization and the Central Treaty Organization and special arrangements with Canada provided for a meaningful exchange of civil defense concepts.

PROGRAM DEVELOPMENT AND SUPPORT

Fiscal year 1965 was the fourth year of continuity in development of the civil defense program in the Department of Defense. Centered on the concept of a nationwide fallout shelter system, the program includes four complementary systems providing for nationwide warning, communications, radiological monitoring and reporting, and damage assessment. These systems, as well as other operational parts of the program—Federal assistance, research, and supporting activities—are discussed separately in other parts of this report. Principal components of the program are operational and are adequately based and sufficiently broad to accommodate expansion and improvement.

Coordinated by the Office of Civil Defense, Federal support of the program includes resources of the Department of Defense, including those of the Armed Forces as well as resources of civilian Federal agencies.

SHELTER SPACE PERSPECTIVE

Most of the fallout shelter space that will be needed to accommodate the total population at work, at home, or in school can be obtained most economically by continuing to identify, mark, and stock fallout shelter space inherent in existing and planned structures, by making low-cost ventilation improvements, and by identifying fallout-shielded areas in small buildings.

The residual shelter needs will have to be met by providing fallout shelter through new construction. Efforts during fiscal year 1965 were concentrated on exploiting fully the existing potential for fallout protection and determining more precisely the nature of the residual shelter requirement. This policy will be continued during fiscal year 1966. Principal aspects of the program designed to expand and improve the inventory of the nationwide fallout shelter system include:

1. Extension of the shelter survey program to include structures too small to qualify as public fallout shelters; i.e., small business facilities and residences.

2. Provision of advice and assistance to architects and engineers on the use of various design techniques to stimulate development of dual-purpose, low-cost fallout shelters in new construction or major structural modification projects.

3. Development of community shelter plans to insure effective use of available shelter space by matching people with specific shelter areas and to identify more precisely the residual shelter requirements.

4. Provision of packaged ventilation kits that will significantly increase the capacity of many existing public fallout shelters where additional space is needed.

ORGANIZATION AND MANAGEMENT

The Office of Civil Defense (OCD) is responsible for conducting the Civil Defense Program at the Federal level. At the head of the OCD is the Director of Civil Defense, who is directly responsible to the Secretary of the Army, and whose position is considered equal to that of an Assistant Secretary of the Army. The legal bases for this organization are (1) Executive Order 10952 *Assigning Civil Defense Responsibilities to the Secretary of Defense and Others*, effective August 1, 1961, and (2) subsequent departmental directives of the Secretary of Defense. From August 31, 1961, to March 31, 1964, the OCD was headed by the Assistant Secretary of Defense (Civil Defense). On March 31, 1964, civil defense functions and responsibilities delegated to the Secretary of Defense by Executive Order 10952 were assigned to the Secretary of the Army, who established the OCD within his office and delegated the functions to the Director of Civil Defense. The new status given the OCD in the Defense Establishment was a recognition of its operational maturity.

OCD responsibility and leadership are civilian in nature. At the end of fiscal year 1965, the organizational structure was as shown in figure 1. The Congress authorized a personnel ceiling of 1,000 positions for the year; these were assigned by OCD as follows: 446 at the departmental level, 444 at the 8 OCD regional offices (see fig. 2), and 110 at various field locations, such as training and warning centers.

During fiscal year 1965, the OCD continued to apply effective techniques in the management of major operational projects and programs. For example, Program Evaluation Review Techniques (PERT) were used to develop information needed for planning, scheduling, monitoring, and evaluating projects economically and effectively; automatic data processing techniques provided more effective handling of information on major programs and projects; and, to manage the daily activities of many projects critical to OCD operations, an automated log-monitoring system proved effective.

To provide data for efficient administration and to assure compliance with program requirements, audits of the OCD financial assistance program were conducted in every State and in more than 575 of their political subdivisions. These audits resulted in improving the

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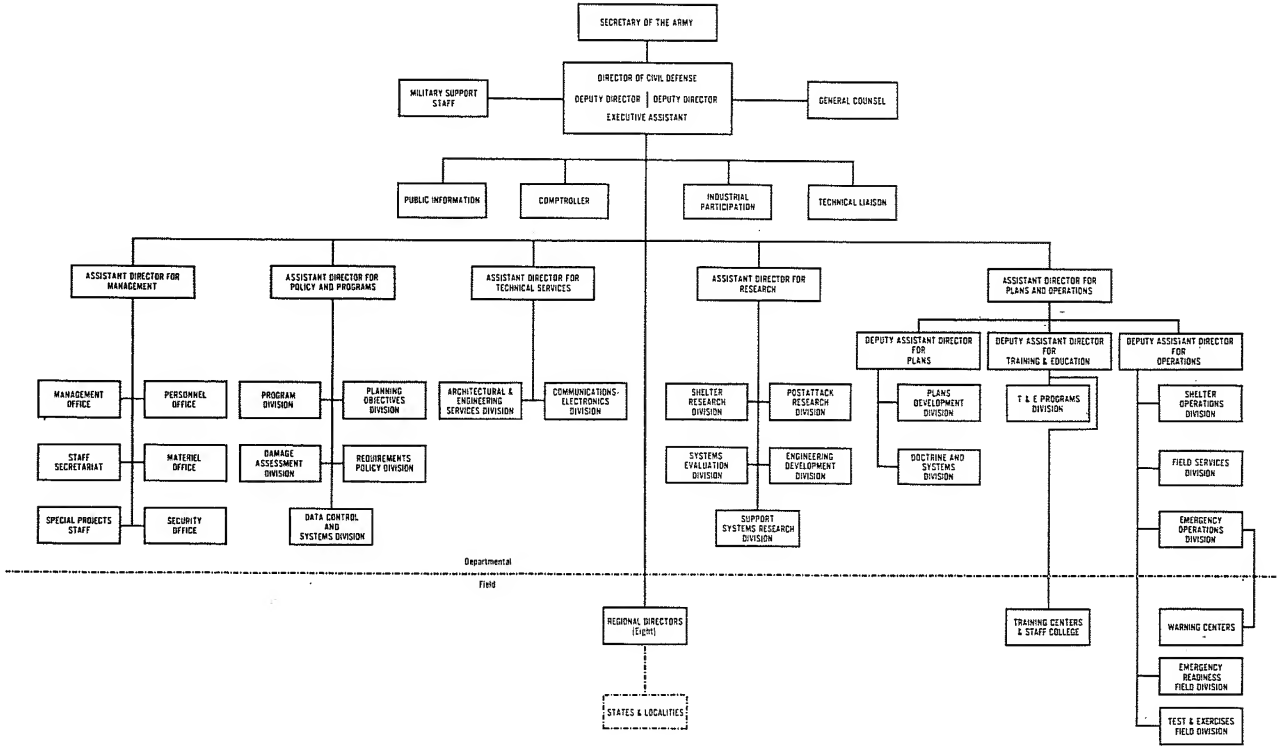


Figure 1.—OCD organization chart.

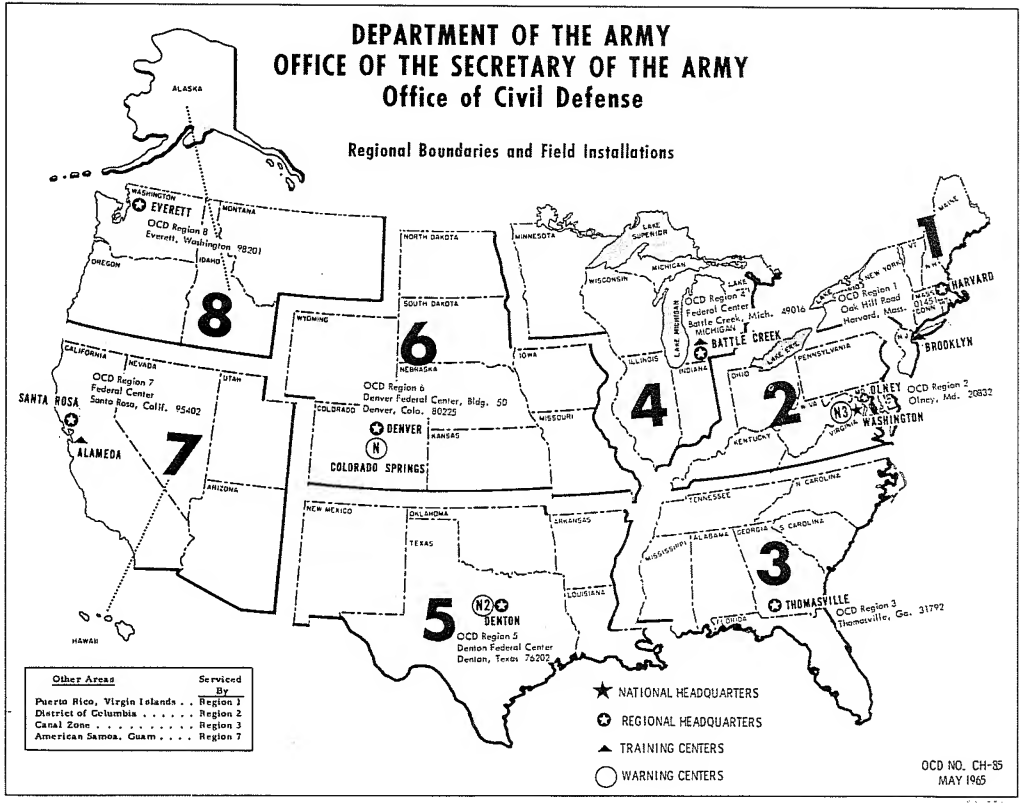


Figure 2.—OCD regions.

efficiency of program administration as well as in clarifying policy decisions and operational procedures.

During fiscal year 1965, there were 562 OCD-awarded open contracts that were subject to audit by cognizant agencies assigned under the audit system established by the Secretary of Defense. These contracts, amounting to $59.7 million, were for research and development and for supporting instruction.

FEDERAL SUPPORT

The OCD continued its pattern of marshaling Federal support from numerous sources. Prominent in this pattern were: The resources of the Department of Defense (DOD), including those of the Armed Forces, and the coordinated efforts of Federal civilian agencies.

Department of Defense Resources

Extensive use of DOD resources was interwoven in some manner with nearly all OCD operations. This is reflected throughout this report, and some of the major support activities are described in this section.

In fallout shelter and protection activities, the Army Corps of Engineers and the Navy Bureau of Yards and Docks continued to assist in surveying the Nation for fallout shelter space, as well as in training architects and engineers for this purpose. These agencies assisted in community shelter planning and in making engineering case studies for the OCD in addition to managing and operating the Protective Structures Development Center at Fort Belvoir, Va. Under contractural arrangements, the Corps of Engineers provided fallout protection for radio stations in the Emergency Broadcast System. The Corps of Engineers also operated the National Civil Defense Computer Facility.

Under OCD policy direction and control, the Defense Supply Agency manged logistics for OCD supplies. With the exception of radiological instruments, procured by the General Services Administration, this included procuring, receiving, and storing shelter supplies as well as issuing them to State and local governments; managing the OCD emergency equipment inventory; and using technical military capabilities for food and container research and development of procurement specifications. Transportation routes, carriers, and transportation costs for shipping shelter supplies from manufacturers to warehouses were determined by the Military Traffic Management and Terminal Service.

Management direction, technical operations, maintenance, and funding of civil defense communications systems, including the Civil

Defense Telephone and Teletype System, the Civil Defense Radio System, and the National Warning System, were the responsibility of the U.S. Army Strategic Communications Command. The OCD warning centers relied upon the North American Air Defense Command for support and warning information.

Publications services, such as procuring printing and binding, distributing new publications, maintaining reserve stocks, and filling requisitions from State and local agencies, were provided by the Adjutant General's Office, Department of the Army. This office controlled the selection and assignment of Standby Reserve officers of all the military services to civil defense positions in State and local governments. It also administered a program for use of Standby Reserve Army personnel in civil defense field offices.

Information and studies supporting the role of civil defense in national strategy and required for OCD damage assessment and operational planning were provided by the Joint Chiefs of Staff, the Defense Atomic Support Agency, the Weapons Systems Evaluation Group, and the National Military Command Systems Support Center.

Several military training resources were provided for civil defense purposes. Subordinate commands of the U.S. Continental Army Command trained State and local personnel in radiological monitoring and explosive ordnance reconnaissance. The Army Pictorial Service developed the scripts for training and educational films and produced them for the OCD. At the U.S. Army Military Police School, Fort Gordon, Ga., industrial civil defense courses were offered to industrial managers and executives and to civil defense officials. The Surgeon General of the Army provided training for U.S. Army Reserve and National Guard personnel, as well as for civil defense agencies, in handling mass casualties. He also provided funds for training physicians in medical schools to cope with disaster conditions and made reserve medical units and personnel available for training civil defense staff and for conducting training demonstrations and exercises in handling mass casualties.

To insure effective and efficient operation of highways during national emergencies, the Army Transportation Corps worked in liaison with officials at all government levels. The Civil Air Patrol worked in close cooperation with the OCD to develop procedures for performing aerial emergency missions.

Industrial defense officers of the Army, Navy, and Air Force conducted security surveys of selected industrial facilities important to national defense. This included inspection of physical security and emergency preparedness measures, with recommendations, if necessary, for remedial action consistent with OCD industrial civil defense guidance.

DOD agencies made surplus property available for civil defense use, and the Army Finance Office handled all payroll and disbursing services for the OCD.

Military Support

The Secretary of Defense, on March 29, 1965, issued a revision of DOD Directive 3025.10, subject: *Military Support of Civil Defense.* (See app. 1.) This directive sets forth guidance to the military services in planning for and controlling military support operations during civil defense emergencies by utilizing the State Adjutants General and their headquarters. In effect, the directive implemented a plan to provide each State with a military headquarters for planning and controlling military support operations during civil defense emergencies. Developed during fiscal year 1964 and approved by the Secretary of the Army and the State Governors, the plan simplifies and makes more effective the coordination and control of those military resources made available by all services and DOD agencies to assist State governments in emergencies.

At the end of fiscal year 1965, the plan was being placed in operation in accordance with the revised directive. This included the preparation of supporting regulations by all the military services and the expansion of State military headquarters with provisions for: (1) State Adjutants General and their staffs to coordinate, plan, and control operations of military forces in support of civil defense operations; (2) active participation by State Adjutants General and their alternates in preattack planning for military support of civil defense; (3) military support planning within each State at State military headquarters; (4) mobilization of State military headquarters prior to or immediately following nuclear attack on the United States; and (5) subsequent control by State Adjutants General or their alternates. Upon mobilization, a predesignated alternate will be named by State authorities if the Adjutant General is scheduled for another State position, or if he is not federally recognized.

The Comanding General, U.S. Continental Army Command (USCONARC), and the Continental United States (CONUS) Army Commanders guide and control the State military headquarters in performing their civil defense missions, except in Alaska, Hawaii, and the Commonwealth of Puerto Rico, where similar headquarters are under the Comanders of appropriate Unified Commands. Each CONUS Army Comander and the appropriate Commander of Unified Commands serving Alaska, Hawaii, and Puerto Rico will maintain current listings of military forces in his area of operations. The lists will show, in order of priority, the degree of probable availability of these forces for support of the civil defense mission.

Use of State Adjutants General for carrying out the civil defense military support mission provides each Governor with a State military headquarters which has the authority and capability of using available military resources within the State in support of State and local civil defense emergency operations.

Upon mobilization of State military headquarters, military personnel made available to them would include Army, Navy, and Air Force personnel in proportion to the representation of each service within a State. Reserve officers designated for this duty may serve the State military headquarters in fulfilling annual active duty training and weekly drill requirements.

During fiscal year 1965, 114 National Guard personnel and 259 active Army personnel attended OCD schools to prepare for planning and training activities relative to military support of civil defense. Action was also taken to provide necessary planning staff for this purpose at various levels: 36 officer and 18 civilian positions were established for allocation at USCONARC and CONUS Army headquarters; 3 officer positions were authorized for the National Guard Bureau; 214 additional National Guard technicians were authorized for allocation according to the National Guard population in each State, and funds for employing 135 of these technicians were made available during fiscal year 1965.

Concurrently with the establishment of civil defense planning staff at State military headquarters and the training of its personnel, the USCONARC also began the development of a model plan for use by the State Adjutants General. It is designed to standardize State plans for military support of civil defense and to enable reviewing authorities to check completed plans rapidly. In coordination with the State Civil Defense Director, the Adjutant General will be able to develop detailed operational plans that should be adequate for use by available military units as an operational order. As far as possible, each plan will cover the area that coincides with State and local political boundaries and will include an organization of tasks providing for the development of command relationships below the level of State headquarters.

Federal Agency Coordination

In a cooperative effort with other Federal agencies, the OCD developed a *Federal Civil Defense Digest and Directory*. It is designed to help State and local civil defense officials understand the working relationships of Federal agencies and their State and local counterparts in dealing with civil defense problems. Experience has shown that this information is needed to achieve better coordination of these activities at all levels of government.

The Interagency Civil Defense Committee, officially established in April 1964, enhanced the value of daily contacts and working relationships between personnel of Federal agencies pursuing related civil defense objectives. Periodic meetings of committee members provided an opportunity to discuss civil defense ideas and problems and present timely information on new developments. Minutes of these meetings were used as a guide by some of the Regional Civil Defense Coordinating Boards. Established in fiscal year 1963, these boards continued to function in coordinating civil defense planning of military departments and Federal agencies with State and local civil defense operations.

OCD coordination of the work of Federal agencies is primarily to assure that civil defense functions are carried out in consonance with major civil defense responsibilities assigned to the Secretary of Defense in Executive Order 10952.

Several other Executive orders assigning civil defense responsibilities and emergency preparedness functions to various departments and agencies have provided the framework for this coordination. Contractual arrangements with several departments and agencies have also permitted the OCD to use their special competence in coordinating and expediting many of its functions in accordance with Executive Order 10952. Many of these activities are discussed throughout this report; e.g., those covered in sections on civil defense research, on development of procedures for estimating postattack population status by the Bureau of the Census, and on the rural civil defense work conducted through the Department of Agriculture.

STATE AND LOCAL PERSPECTIVE

The best measure of success of the civil defense effort is the performance readiness of State and local governments to protect people from the effects of nuclear attack. At the end of fiscal year 1965, this capability was supported by official civil defense organizations in the 50 States and in at least 4,300 local communities. Staffed by more than 5,400 full-time or part-time paid civil defense personnel, these organizations are under the authority of elected officials and are legally an integral part of civil government.

Approximately 2.7 million State and local government employees and volunteers have civil defense assignments as part of these organizations. Personnel from all walks of life have been given civil defense training to help expedite these assignments, and plans have been made for coordinated use of State and local resources in emergencies. Under the guidance of the OCD (see *Technical Assistance and Guidance* in part V), State and local governments, throughout fiscal year

1965, continued to improve the capability of their civil defense organizations by planning and training activities.

During fiscal year 1965, as in prior years, the performance readiness of many State and local civil defense organizations was tested in combating the effects of major natural disasters, for these organizations stand ready, willing, and able to serve whether the disaster be caused by nature or by nuclear attack. Activities during major disasters included:

1. *Hurricane Dora, September 1964.*—During this dangerous storm and during Hurricane Cleo, its predecessor, great damage occurred in Florida, Georgia, North Carolina, and South Carolina. In virtually all affected areas, civil defense organizations were mobilized and rendered notable service in alleviating injuries and effects of destruction and in helping with recovery and rehabilitation efforts.

Gov. Farris Bryant of Florida gave public credit to civil defense organizations for the fact that not a single life was lost in the two hurricanes, which caused over $300 million worth of property damage in his State. Said Governor Bryant: "Even if our Nation is never attacked, the (civil defense) work we did in preparing for that threat paid off a million times over when Hurricanes Cleo and Dora struck."

Gov. Terry Sanford of North Carolina expressed his appreciation of the work of civil defense officials and all concerned with civil defense in connection with Hurricane Dora. He said: "I was interested in seeing the preparations for the safety and well-being of our citizens that were being taken in this case, in contrast to the situation just 10 short years ago when Hurricane Hazel hit so hard and hurt us so much."

2. *Hurricane Hilda, October 1964.*—Hurricane Hilda, one of the largest ever seen in the Gulf of Mexico, lashed the Louisiana coast, killed 36 persons, including 8 civil defense workers, and caused $95 million worth of damage.

Civil defense organizations helped to evacuate about 125,000 persons from low-lying areas that were later flooded; helped to provide them with temporary quarters and assistance; set up a civil defense emergency hospital at Raceland, in Lafourche Parish, which treated 155 casualties in its first 3 hours of operation; aided civil authorities in maintaining traffic control, establishing sanitation measures, etc., and performed scores of essential tasks that held casualties and property loss to a minimum and expedited recovery and rehabilitation of the affected communities.

Commenting editorially on the disaster measures that were taken in the case of Hilda, the *New Orleans States-Item* offered this appraisal: "From the point of view of adequate hurricane detection and observation, of alerting the public, of preparations for an expected catastrophe, (and) of the general handling of a situation of disaster proportions, . . . (this) represents a new level of achievement on the part of human effort to deal with such crises." The civil defense organization participated in all of the activities mentioned, and

helped the State and local governments in Louisiana reach that "new level of achievement."

3. *Midwest floods, April 1965.*—When the Mississippi River and its tributaries overflowed, dozens of communities in Minnesota, Iowa, Wisconsin, and Illinois suffered heavy flood damage, as well as loss of life. In all four States, local and State civil defense organizations coordinated and carried out the efforts of governmental authorities to minimize damage, save lives, and provide relief and recovery assistance. These were some of the things they did:

Built sandbag dikes at critical points.

Evacuated persons whose homes were flooded or in danger of being flooded, and joined with the Red Cross and Salvation Army in providing them temporary quarters, food, clothing, etc.

Issued official warnings, information, and instructions to the public.

Provided and operated emergency generators, pumps, and piping to help get rid of the water in low-lying areas.

Participated in sanitation and traffic control measures.

In a May 4 letter to U.S. Senator Eugene McCarthy, Minnesota, Gov. Karl F. Rolvaag evaluated civil defense assistance thus: "I believe our success (in coping with the flood situation) . . . can be attributed to a pitifully small group of dedicated citizens who had worked untiringly for many weeks before the flood struck to prepare both our citizenry and our local units of government for a possible disaster. This small group was comprised of our State, county, and municipal civil defense organizations. On these people fell the major burden of preparing for a disaster, of operating during the disaster, and now (they) are intimately involved in recovering from the disaster. I would like to state here and now that had it not been for these people, the cost of this disaster would have been many, many times greater in lives lost and property damaged . . . . We have seen civil defense function in a widespread natural disaster. Certainly their value to the citizens of this Nation, should we become involved in a major conflict of international proportions, would prove invaluable. The entire Nation should rise in praise of our civil defense program."

4. *Midwest tornadoes, April and May 1965.*—On April 10 and 11, 1965, a series of more than 35 tornadoes struck in Arkansas, Wisconsin, Michigan, Illinois, Indiana, and Ohio, causing over 200 deaths.

In Conway, Ark., the twister killed 6, injured 150, and destroyed 100 homes. Severe as the toll was, it would have been greater if the following and other civil defense actions had not been taken:

Acting on instructions from State civil defense headquarters, the Conway radio station (KCON) started broadcasting tornado warnings 15 minutes before the storm struck, and continued such warnings at 3-minute intervals. KCON is a part of the nationwide Emergency Broadcast System, and has a direct communications link with State civil defense headquarters.

Conway and Faulkner County auxiliary police were alerted for emergency duty.

Nearby communities rushed civil defense emergency generators and rescue units to the Conway area. One generator was sent to the Conway Memorial Hospital, where the dead and injured were being received.

The State civil defense director went to the scene and coordinated all efforts for clearing debris.

In expressing his appreciation of the civil defense assistance rendered in Conway, Ark., Gov. Orval Faubus said this to Stewart K. Prosser, State civil defense director: "It is only rarely that an occasion arises where praise can be given without reservation. However, such is the case this time, so far as I am concerned, in regard to you and the manner in which you exercised most excellent judgment, control, and direction of practically all of the agencies and the many hundreds of volunteers who came to help following the disaster . . . . The action, the work, and the good judgment of the personnel of your department is the kind which reflected credit upon each of you individually, upon the civil defense agency, and upon this administration. Please accept my heartfelt thanks and appreciation."

In a similar letter to Mr. Prosser, Conway Mayor Walter Dunaway stated: "Without you we would have been completely helpless. All of your personnel worked efficiently and tirelessly to aid the people who were stricken in this disaster."

In Minnesota, on May 6, the civil defense outdoor warning system was used in many communities to warn of approaching tornadoes. In Minneapolis-St. Paul, radio station WCCO (an Emergency Broadcast System station) broadcast official civil defense information and instructions to the public.

Similar actions were taken in the other States affected. In one Michigan community (Lansing), the city council on May 10 approved the expenditure of matching funds to improve its disaster-alerting system, after the tornado emergency had again demonstrated the value of that system.

5. *Seattle earthquake, April 1965.*—This earthquake resulted, fortunately, in few casualties and only moderate property loss, and the civil defense organizations in the State of Washington helped governmental authorities cope with the situation and contributed to their control of it. For example:

The Washington State Patrol microwave system, paid for partly by civil defense matching funds, served as the emergency communications medium for all affected areas, thus helping governmental authorities assess and cope with the existing conditions.

Civil defense units participated in inspection, rescue, damage survey, and repair operations, as well as in traffic control, and other activities.

Loss and damage information flowing into the State civil defense headquarters at Olympia from city and county civil defense organizations in the affected area was relayed to State officials and news media. The broadcasting of this information served to inform and reassure the public and helped to prevent anxiety and possibly panic.

FINANCIAL SUMMARY

Approximately $119.8 million was available for obligation in carrying out civil defense operations during fiscal year 1965. Of this amount, $105.2 million was from new appropriations, and the balance of $14.6 million was carried over from fiscal year 1964. An additional $1.8 million of prior year funds was held for obligation during fiscal year 1966 for Federal regional underground centers.

At the end of fiscal year 1965, the OCD had obligated more than $94.8 million. The $25.0 million of unobligated funds includes $21.3 million which can be carried over into fiscal year 1966. Table 1 shows the amounts obligated for specific budget activities in support of operational programs and functions.

TABLE 1.—*Financial summary for fiscal year 1965*
[In thousands]

Budget activity	Funds available for obligation	Funds obligated
GRAND TOTAL	$119, 824	$94, 821
OPERATION AND MAINTENANCE, TOTAL	74, 985	71, 303
Warning and detection	6, 992	6, 360
Warning systems	3, 030	2, 705
Detection and monitoring systems	1, 029	946
Warehousing and maintenance	2, 933	2, 709
Emergency operations	27, 044	25, 028
Emergency broadcast system	4, 843	4, 265
Damage assessment	4, 141	4, 098
Training and education	12, 623	12, 107
Emergency operations systems development	2, 231	2, 218
Public information	2, 910	2, 170
Other emergency operations	296	170
Financial assistance to States	26, 464	25, 581
Survival supplies, equipment and training	4, 900	4, 348
Emergency operating centers	6, 050	5, 761
Personnel and administrative expenses	15, 514	15, 472
Management	14, 485	14, 334
RESEARCH, SHELTER SURVEY AND MARKING, TOTAL	44, 489	23, 477
Shelters	32, 067	12, 180
Shelter survey and marking	14, 368	7, 414
Shelter stocking	6, 699	2, 985
Shelter development	5, 750	316
Improvement of shelters	2, 750	481
Smaller structures	2, 500	984
Research and development	12, 422	11, 297
CONSTRUCTION OF FACILITIES, TOTAL	350	41

NATIONWIDE FALLOUT SHELTER SYSTEM

The President, in his special message on national defense on January 18, 1965, said, in part, to the Congress:

> It is already clear that without fallout-shelter protection for our citizens, all defense weapons lose much of their effectiveness in saving lives. This also appears to be the least expensive way of saving millions of lives, and the one which has clear value even without other systems. We will continue our existing programs and start a program to increase the total inventory of shelters through a survey of private homes and other small structures.

This part of the report describes fiscal year 1965 progress in meeting the national shelter policy objective of providing fallout shelter for the entire population. It also describes techniques developed to promote further expansion of the nationwide fallout shelter system and related activities designed to strengthen the system.

OPERATIONAL ACCOMPLISHMENTS

Public fallout shelter space for 14.2 million persons was located during fiscal year 1965, extending nationwide coverage to approximately 136 million. Operational gains were also made in marking, licensing, and stocking public fallout shelters. At the end of fiscal year 1965, space had been marked for nearly 76 million persons; space had been licensed for more than 77 million; and space had been stocked to accommodate nearly 34 million. A summary of fiscal year 1965 progress is given in table 2 and in figure 3.

TABLE 2.—*Summary of progress in public fallout shelter program, fiscal year 1965*

Program action	Number of facilities (in thousands)				Number of spaces (in millions)			
	End of fiscal year 1964	End of fiscal year 1965	During fiscal year 1965		End of fiscal year 1964	End of fiscal year 1965	During fiscal year 1965	
	Total	Total	Gain	Percent gain	Total	Total	Gain	Percent gain
Located	143. 7	155. 1	11. 4	7. 9	121. 4	135. 6	14. 2	11. 7
Marked	79. 8	87. 9	8. 1	10. 2	63. 8	75. 9	12. 1	19. 0
Licensed	70. 7	81. 8	11. 1	15. 7	62. 8	77. 2	14. 4	22. 9
Stocked	45. 7	63. 0	17. 3	37. 9	23. 8	33. 8	10. 0	42. 0

These accomplishments are the result of a major program started in September 1961. Its key elements include (1) a continuing nationwide survey to locate public fallout shelter space in existing structures, (2) the marking and licensing of acceptable shelter space for public use, and (3) the stocking of licensed shelters with survival supplies. Succeeding sections of this report present the status of these operations.

Survey Operations

Each public fallout shelter included in this program contains space for at least 50 persons, allowing 10 square feet per person in ventilated space and 500 cubic feet in unventilated space. The minimum protection factor required is 40; i.e., radiation inside the shelter would be reduced to one-fortieth or less of that existing outside. Approximately 1.5 cubic feet of storage space per person is required to accommodate a complete assembly of shelter supplies.

TABLE 3.—*Shelter space located, protection factor of 40 or higher, fiscal year 1965*

Area	Number of facilities located			Number of spaces [1] (in thousands)		
	Before fiscal year 1965	During fiscal year 1965	Total	Before fiscal year 1965	During fiscal year 1965	Total
Total	143, 653	11, 411	155, 064	121, 390	14, 250	135, 640
REGION ONE	54, 439	4, 441	58, 880	39, 227	6, 317	45, 544
Connecticut	2, 690	129	2, 819	2, 146	33	2, 179
Maine	471	31	502	242	15	257
Massachusetts	5, 646	244	5, 890	3, 872	176	4, 048
New Hampshire	371	44	415	168	22	190
New Jersey	6, 136	1, 299	7, 435	4, 232	1, 281	5, 513
New York	37, 278	2, 308	39, 586	27, 492	4, 480	31, 972
Rhode Island	502	30	532	503	6	509
Vermont	257	47	304	111	22	133
Puerto Rico	1, 073	309	1, 382	459	281	740
Virgin Islands	15	0	15	2	0	2
REGION TWO	24, 617	3, 963	28, 580	22, 856	3, 729	26, 585
Delaware	461	58	519	221	23	244
District of Columbia	1, 866	553	2, 419	2, 466	822	3, 288
Kentucky	1, 648	2	1, 650	1, 943	9	1, 952
Maryland	1, 970	262	2, 232	1, 949	207	2, 156
Ohio	6, 230	725	6, 955	5, 215	911	6, 126
Pennsylvania	9, 046	2, 083	11, 129	8, 416	1, 592	10, 008
Virginia	2, 600	261	2, 861	2, 151	163	2, 314
West Virginia	796	19	815	495	3	498

See footnotes at end of table.

TABLE 3.—*Shelter space located, protection factor of 40 or higher, fiscal year 1965*—Continued

Area	Number of facilities located			Number of spaces[1] (in thousands)		
	Before fiscal year 1965	During fiscal year 1965	Total	Before fiscal year 1965	During fiscal year 1965	Total
REGION THREE	9,039	699	9,738	8,756	1,153	9,909
Alabama	1,645	41	1,686	1,211	26	1,237
Florida	1,405	294	1,699	1,455	788	2,243
Georgia	1,417	77	1,494	2,324	113	2,437
Mississippi	473	−4	469	351	1	352
North Carolina	1,567	165	1,732	1,198	142	1,340
South Carolina	701	2	703	478	1	479
Tennessee	1,738	19	1,757	1,698	52	1,750
Canal Zone	93	105	198	41	30	71
REGION FOUR	21,267	512	21,779	20,465	555	21,020
Illinois	7,714	13	7,727	10,267	50	10,317
Indiana	2,715	32	2,747	2,200	21	2,221
Michigan	3,984	161	4,145	3,252	311	3,563
Minnesota	3,170	62	3,232	2,132	37	2,169
Wisconsin	3,684	244	3,928	2,614	135	2,749
REGION FIVE	8,090	−395	7,695	7,577	369	7,946
Arkansas	1,370	55	1,425	881	−9	890
Louisiana	836	2	838	1,195	1	1,194
New Mexico	1,111	−679	432	229	13	242
Oklahoma	1,295	120	1,415	996	117	1,113
Texas	3,478	107	3,585	4,277	229	4,506
REGION SIX	12,415	1,473	13,888	8,235	1,411	9,646
Colorado	1,183	269	1,452	886	464	1,350
Iowa	2,012	143	2,155	1,218	54	1,272
Kansas	2,280	122	2,402	1,408	91	1,499
Missouri	3,706	322	4,028	3,584	475	4,059
Nebraska	2,202	182	2,384	693	94	787
North Dakota	423	149	572	158	90	248
South Dakota	428	176	604	201	79	280
Wyoming	181	110	291	89	62	151
REGION SEVEN	9,534	329	9,863	10,764	559	11,323
Arizona	408	9	417	329	9	338
California	6,625	226	6,851	9,328	437	9,765
Hawaii	403	19	422	278	16	294
Nevada	239	31	270	167	61	228
Utah	1,837	44	1,881	653	36	689
American Samoa	2	0	2	[2]	0	[2]
Guam	20	0	20	8	0	8
REGION EIGHT	4,252	389	4,641	3,511	156	3,667
Alaska	252	−14	238	127	−21	106
Idaho	344	40	384	128	45	173
Montana	624	23	647	227	52	279
Oregon	1,357	−31	1,326	1,154	36	1,190
Washington	1,675	371	2,046	1,875	44	1,919

Shelter survey operations in fiscal year 1965, a continuation of the nationwide survey essentially completed in May 1963, were principally of an updating nature. These operations increased the nationwide shelter inventory by more than 11,400 facilities with an aggregate capacity for 14.2 million persons, and boosted the grand total to more than 155,000 facilities with an aggregate capacity for 135.6 million persons. (See table 3.)

Major sources of additional shelter space derived from the updating operations were the result of new or modified construction and the application of improved criteria and resurvey procedures to structures previously estimated to have a marginal capacity or protection factor.

Updating operations also produced a considerable amount of data applicable to making more effective use of shelter under emergency conditions. For example, a record was made of (1) the number of telephones and telephone connections available for exchanging emergency information with specific shelters, (2) the amount of trapped water available to shelterees from water pipes and other plumbing fixtures, and (3) the capacity of sewage sanitation facilities available to shelters. In communities so requesting, survey personnel also obtained shelter licenses from building owners or managers.

In January 1965, as additional facilities were surveyed, operations were extended to help provide more precisely for various shelter needs. Building owners or managers were asked to sign permits for plumbing adaptations necessary to make trapped water available to shelterees. The number of drums needed for water and waste storage in a facility was determined by the amount of available trapped water in the facility and the space available for storage of waste. For those shelter facilities lacking sufficient trapped water to accommodate shelterees, cost estimates were made for the installation of a well, if such a source of water should be considered feasible.

Other extensions of the operation included a determination of the number of sanitation and radiological defense kits needed and an evaluation of available food supplies that could be used in lieu of those provided by the OCD.

Shelter survey operations were coordinated with State and local civil defense planning officials to help them allocate shelter space to the people in each locality. Priority was given to those areas having high fallout shelter deficiencies, and especially to the 57 community shelter planning areas. (See *Planned Shelter Usage, Community shelter planning*, in part III.) Special shelter survey projects were also conducted. (See *Special Surveys* in part III.)

Marking and Licensing Operations

The OCD continued to furnish standard fallout shelter signs for the interior and exterior marking of public fallout shelters meeting the minimum requirements of the survey operations. With permission of the owners, more than 8,000 facilities were marked during fiscal year 1965. This increased the number of marked facilities to nearly 88,000 having an aggregate shelteree capacity for nearly 76 million.

The posting of fallout shelter signs is primarily the responsibility of State and local governments. However, shelter survey personnel assist in performing this task upon request and, when practicable, help in shelter-sign maintenance when facilities are revisited for survey updating. During fiscal year 1965, about 57,000 shelter signs were posted, making an approximate total of 140,000 exterior and 475,000 interior signs in use.

Before stocking public fallout shelters with survival supplies, the OCD requires that property owners and the local government officials sign a *Fallout Shelter License or Privilege* form. During fiscal year 1965, licenses for more than 11,000 facilities were signed, increasing the total to nearly 82,000 facilities with an aggregate shelter capacity for more than 77 million persons.

Local governments are responsible for obtaining these licenses, but beginning in fiscal year 1965, survey personnel have performed this task upon approval of local civil defense officials. No monetary payment is made to or by the owner of the shelter facility, and he may revoke the license by sending a 90-day notice by registered mail to his local government as well as to the Federal Government.

The license authorizes temporary access by the public to specified shelter space in emergencies (during and after actual or impending attack), maintenance of shelter provisions on the premises, and Federal and local government inspection. It also makes the local government responsible for care and maintenance of the shelter provisions, and except for willful damage or bad faith, exempts the owner from these responsibilities.

Stocking Operations

Shelter stocking operations during fiscal year 1965 were extended to more than 17,000 public fallout shelters, increasing the number stocked with general survival supplies to more than 63,000. These supplies are sufficient to accommodate 56.2 million persons, the rated capacity of the shelters, for 8 days. A total of 33.8 million can be accommodated for a 2-week period by these supplies. (See table 4.) In addition, more than 15,600 public fallout shelters were furnished

with radiation kits, bringing the number so equipped to over 67,600. These shelters have a rated capacity for more than 61.5 million persons.

Many public fallout shelters have been stocked to accommodate their rated shelteree capacity for a 2-week period. Some shelters, lacking sufficient storage space and for other reasons, could not be stocked to accommodate their rated shelteree capacity for this period. However, in many of these shelters, the shelterees would have access to water and food supplies normally available in the buildings where the shelters are located. The aggregate shelter space stocked corresponds to an average of 60 percent of the total rated shelteree capacity of these facilities.

Survival supplies.—Survival supplies placed in licensed public fallout shelters consist of food, sanitation and medical supplies, water storage containers, and radiation detection equipment. These supplies, described in appendix 2, were developed, selected, and procured by the Federal Government. They are deemed adequate to sustain the lives of normally healthy persons and to enable them to resume productive activities upon emergence.

Operational procedures.—Other Federal agencies and their field facilities are used to full advantage in the procurement and distribution of shelter supplies. Through its various supply centers, the Defense Supply Agency (DSA) procures general shelter supplies, and the General Services Administration (GSA) procures radiological defense equipment for the OCD.

Upon receipt at assembly points, appropriate survival supplies are packaged into sanitation, medical, and radiation kits. These are shipped to distribution warehouses and, with the exception of radiation kits, which are distributed separately, are usually issued with other items (water containers and food) as complete sets of supplies for use in licensed public fallout shelters.

The Defense General Supply Center (DGSC) at Richmond, Va., a field facility of the DSA, is the National Inventory Control Point for the distribution of shelter supplies. During fiscal year 1965, 35 Department of Defense (DOD) and 24 GSA warehouses served as distribution points to local governments. Five DOD and four GSA distribution points were designated as area support warehouses. In addition to distributing supplies directly to shelters, these warehouses maintained sufficient stock to resupply subsidiary warehouses. At the end of fiscal year 1965, operations at 13 distribution points were being terminated, since their missions were nearing completion and would be absorbed by other warehouses.

The series of actions that result in actual stocking of a specific shelter begin when the owner and local government officials sign the shelter license agreement. Based upon this shelter license data, a preprinted requisition for the required shelter supplies is sent by the

TABLE 4.—*Shelter space stocked with general shelter supplies*

Area location	Number of spaces (in thousands)	
	Fiscal year 1965	Cumulative total end of fiscal year 1965
TOTAL	10, 014	33, 814
REGION ONE	3, 100	8, 016
Connecticut	103	851
Maine	12	136
Massachusetts	314	999
New Hampshire	34	105
New Jersey	189	1, 104
New York	2, 364	4, 429
Rhode Island	32	193
Vermont	10	64
Puerto Rico	42	133
Virgin Islands	0	2
REGION TWO	1, 526	6, 442
Delaware	22	85
District of Columbia	57	569
Kentucky	76	810
Maryland	147	587
Ohio	391	1, 411
Pennsylvania	525	2, 082
Virginia	228	641
West Virginia	80	258
REGION THREE	1, 224	3, 918
Alabama	197	659
Florida	182	644
Georgia	315	835
Mississippi	51	256
North Carolina	124	605
South Carolina	95	217
Tennessee	260	663
Canal Zone	0	38
REGION FOUR	1, 382	5, 151
Illinois	489	1, 118
Indiana	214	856
Michigan	198	1, 111
Minnesota	197	1, 052
Wisconsin	284	1, 014
REGION FIVE	681	3, 003
Arkansas	121	395
Louisiana	76	402
New Mexico	25	125
Oklahoma	160	599
Texas	299	1, 482
REGION SIX	648	2, 938
Colorado	132	454
Iowa	103	494
Kansas	129	511
Missouri	133	843
Nebraska	25	305
North Dakota	33	101
South Dakota	66	169
Wyoming	27	60
REGION SEVEN	1, 073	2, 875
Arizona	27	145
California	913	2, 299
Hawaii	33	95
Nevada	27	117
Utah	72	215
American Samoa	0	0
Guam	1	1
REGION EIGHT	380	1, 471
Alaska	7	63
Idaho	30	110
Montana	61	160
Oregon	106	330
Washington	176	808

DGSC to the local government. When local officials sign and return the requisition, the DGSC sends a shipping document to the appropriate warehouse and the local government. The supplies are then issued by the warehouse as soon as practicable.

The Federal Government pays for transportation of supplies to local central delivery points, or to shelters of more than 1,000-person capacity if 50 percent or more of the population of the county are more than 25 air-miles from the warehouse. If lesser distances are involved, local governments provide transportation for pickup and delivery of shelter supplies.

Local governments are responsible for placing the supplies in shelters and for future care and maintenance of these provisions. During fiscal year 1965, the OCD conducted an inspection of supplies in a 10-percent sampling of the shelters stocked before July 1963. The inspection confirmed the availability of the supplies which were found to be in good condition, with only minor losses. A further indication that fallout shelter supplies are secure is the insignificant number of replacements necessitated by losses from thefts, fires, natural disasters, and all other causes. At the end of fiscal year 1965, requisitions for and issuances of replacements of these losses amounted to only about one-tenth of one percent of the total value of all shelter supplies issued since the beginning of the program in fiscal year 1962.

Status of operations.—General shelter supplies ordered in fiscal year 1964 and delivered to Federal warehouses during fiscal year 1965 included food, sanitation kits, and medical kits in sufficient quantity to accommodate 12.8 million persons for 2 weeks. Added to supplies delivered in prior years, this completed procurement for enough supplies to accommodate 63 million persons. No additional procurement of general shelter supplies was initiated in fiscal year 1965 because of lack of funds.

About 16 percent of these supplies were placed in shelters during fiscal year 1965; 38 percent were placed in shelters in prior years, and at the end of fiscal year 1965, the remaining 46 percent, for use in filling local requisitions for supplies, were at warehouses. (See fig. 3.)

The cost of procuring the general survival supplies since the inception of the program in fiscal year 1962 has amounted to slightly less than $119.1 million. This includes supplies to accommodate 63 million persons for 2 weeks, except that water containers were procured for only 50 million, since many shelters have trapped water available for emergency use. Other costs of shelter stocking were warehousing, transportation, and radiological kits furnished to more than 67,600 shelters. At the end of fiscal year 1965, the average cost of shelter stocking to the Federal Government was approximately $2.43 per shelter space.

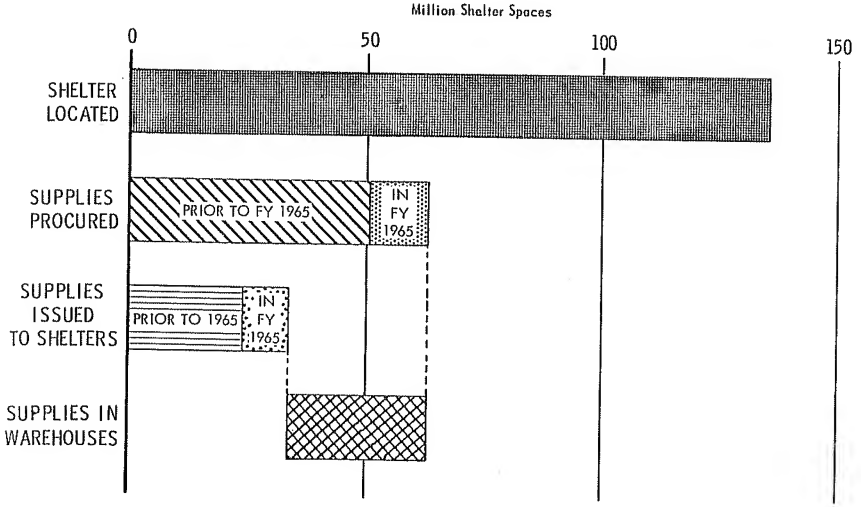


Figure 3.—Summary of shelter stocking operations, end of fiscal year 1965.

EXPANSION TECHNIQUES

By the end of fiscal year 1965, several techniques designed to expand the inventory of the nationwide fallout shelter system were being developed or adapted for practical use, and information concerning them was being disseminated as it became available. These techniques, closely allied with several Emergency Operations System Development projects (see *Planned Shelter Usage* in part III) in promoting effective use of fallout shelters at the community level, were directed toward exploiting fully the fallout protection inherent in existing buildings and developing optimum protection in new construction.

Architectural and Engineering Design

Information on new design techniques was widely disseminated among architects and engineers during fiscal year 1965. These techniques, developed late in fiscal year 1964, provided for enhancing inherent fallout protection features in new construction with little or no increase in cost and without sacrificing normal functional or esthetic qualities of the building. Use of these techniques is called "slanting." (See fig. 4.) Some of the major slanting techniques are described and illustrated in appendix 3.

Slanting becomes a reality.—As confirmed by the OCD booklet *New Buildings With Fallout Protection*, TR 27, published in January 1965, architects and engineers have made an excellent start in applying slanting in designing new buildings. The 34 buildings described in

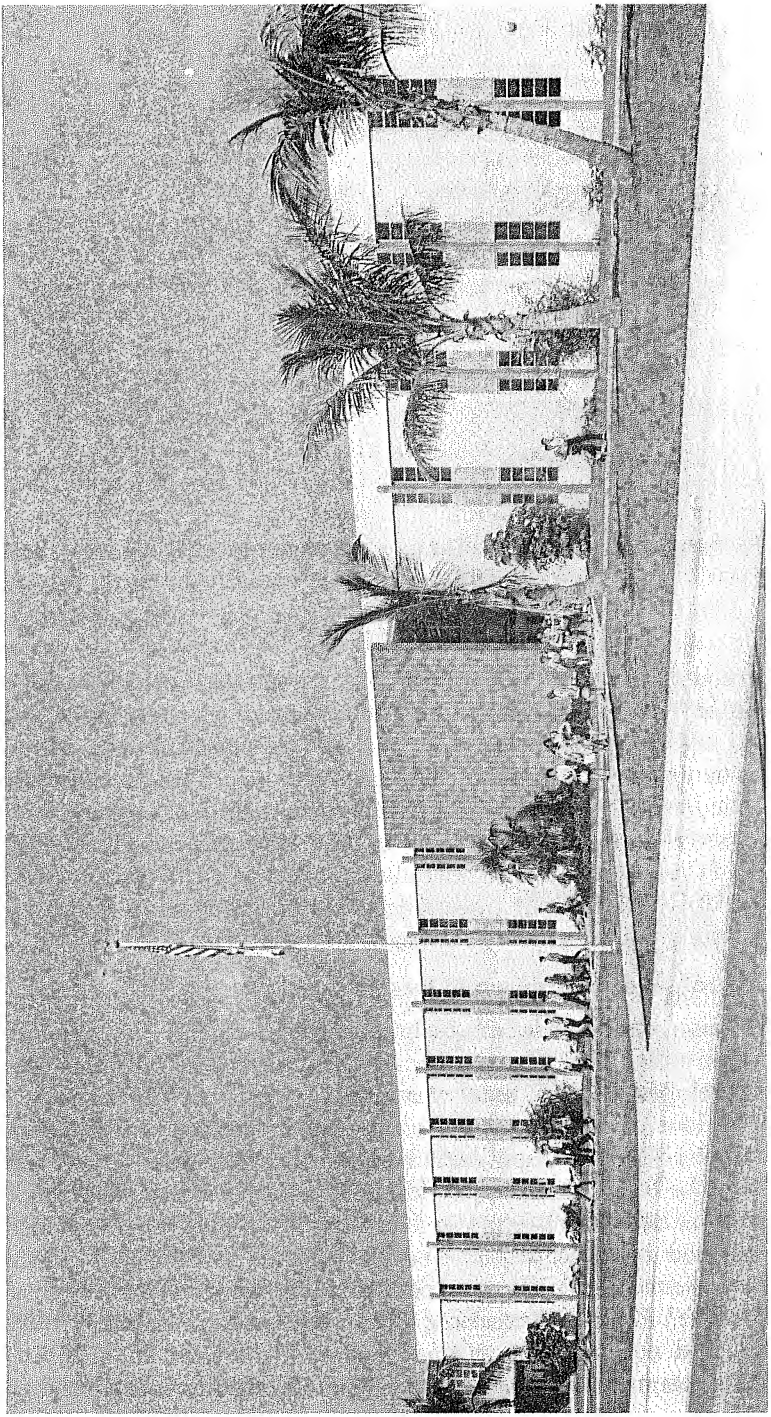


Figure 4.—Miami Coral Park Senior High School, Miami, Fla. Designed to incorporate fallout protection, the building has reduced window areas and a baffled doorway among other protective features.

the booklet show how preplanned, dual-use shelter was incorporated into the original design of buildings recently completed or under construction. Also, the booklet shows how architects and engineers have used simple and inexpensive design techniques to enhance the inherent fallout protection offered by these structures.

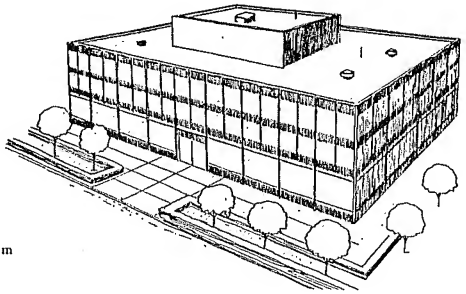
Most of the buildings described are schools, but police and fire stations, apartment houses, office buildings, and churches are also included. Actual cost data furnished by the designers confirm the fact that dual-use fallout shelter can be inexpensive if planned for early in designing a building. In some cases, the radiation protection was inherent in the building design and was therefore achieved without any increase in cost. But equally important is the fact that slanting is shown to be feasible, practical, and desirable. It can be used without adversely affecting the cost, appearance, or function of new buildings.

Shelter in Federal buildings.—Slanting, applied to the construction of new Federal buildings, is an important source of public fallout shelter space in many communities. Cost estimates for incorporating fallout shelter space in new buildings, formerly ranging from $40 to $50 per shelteree, have been reduced considerably. In some large buildings, the cost of incorporating shelter space may vary from 0 to 1 percent of the total construction cost. An example of this is illustrated in figure 5.

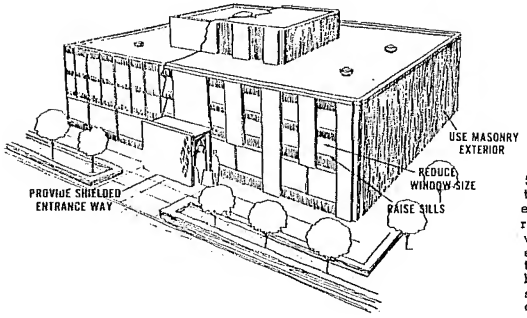
During fiscal year 1965, the OCD offered the General Services Administration (GSA) and other Federal agencies responsible for construction projects, the advice of professional consultants qualified in slanting. This enabled the GSA to apply slanting techniques to the designing of buildings for which funds for fallout shelters were specified in the 1965 Independent Offices Appropriation Act. To the extent that slanting could be used to enhance fallout protection without additional cost, this service also applied to 143 GSA 1965 construction projects for which no fallout shelter funds were authorized.

Generally, Federal construction agencies accepted the concept of slanting and provided professional staff to develop fallout shelters by applying this technique without further OCD assistance. The OCD has assurance from the engineering services of the military departments that slanting will be used to full advantage in new military construction, and that maximum use will be made of fallout shelter space already located in military structures.

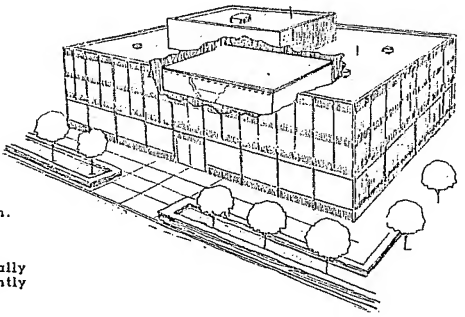
More than $13 million of the $17.5 million fund for incorporating shelters in new and existing Federal buildings was returned to the U.S. Treasury before the end of fiscal year 1965. This fund, contained in the civil defense appropriation of the 1962 Department of Defense Appropriation Act, was only partially expended as the result of the limitation on shelter construction contained in section 303 of the Inde-



5a.--Exterior view of building. Exterior construction is primarily of curtin-wall type, using aluminum panels and glass.

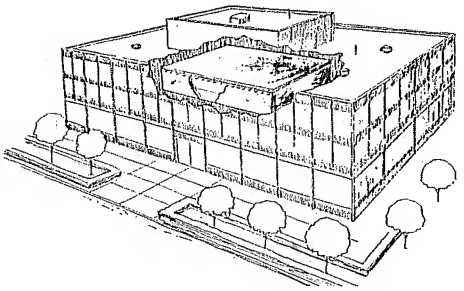


5b.--Slanting techniques applied to exterior of building: sheltered entrance, masonry construction, raised window sills, and reduced window size. These modifications enhance the inherent fallout protection to shelterees but may not be acceptable to designer and owner, since the appearance is appreciably changed.

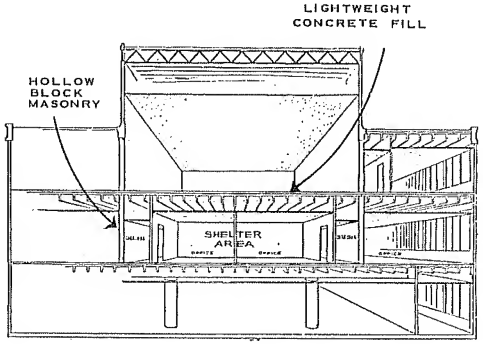


5c.--Fallout protection inherent in building without exterior modification. The best protection is in the core area of the second floor. Masonry partitions and concrete ribbed floors above and below this area automatically provide a protection factor of 35, slightly less than the OCD shelter criterion.

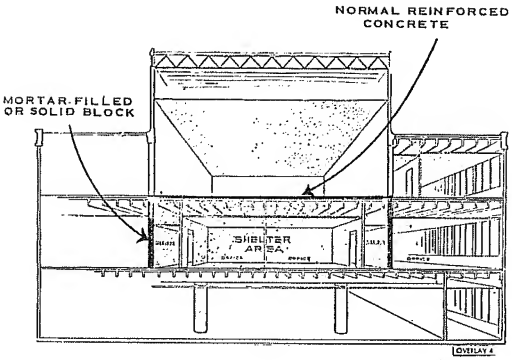
Figure 5.—Incorporation of fallout shelter in a Federal office building. These illus-



5d.--Upgrading the protection factor to 40, the OCD shelter criterion. This required (1) changing the 8-inch hollow block masonry wall surrounding the corridor area to an 8-inch solid block wall, or filling the hollow blocks with mortar, and (2) changing the 3½-inch lightweight concrete fill on the floor directly over the core area to 3¼-inch normal reinforced concrete.



5e.--Cross section of the building showing the shelter core area.



5f.--Cross section of the building showing shelter core area upgraded to protection factor greater than 40. Pertinent data are as follows:

Building size: 92 feet 8 inches by 137 feet 8 inches, or approximately 38,000 square feet.
Estimated building cost: $1,055,000.
Shelter area: 4,500 square feet in core of the second floor.
Shelter capacity: 450 persons.
Minimum protection factor: above 40 in corner of corridor area.
Shelter cost per square foot of shelter space: $0.22.

trations show how slanting techniques may be used to achieve shielding for occupants.

pendent Offices Appropriation Act of 1963. Federal agencies to which OCD allotted this fund developed shelter space for thousands of persons before this program was discontinued in fiscal year 1965. However, fallout shelter can be developed more economically in the future by applying the technology of slanting in designing new Federal buildings.

Special Surveys

Small structures.—A survey was begun to locate fallout shelter in buildings too small to meet the 50-shelteree-capacity minimum requirement in the regular nationwide shelter survey. Limited to the portion of 57 community shelter planning areas having shelter deficiencies, this special survey was designed to serve as a model for adding shelter space in small structures to the nationwide shelter inventory where needed.

During fiscal year 1965, plans and instructions for conducting the survey were completed, and an electronic data processing system was designed to include the computation of the protection factor for small buildings. Since actual operation of the survey was started late in the year, the full impact of using shelters in small buildings to expand the inventory of the nationwide system remained to be determined. But samples completed indicated that shelter space for an estimated 20 million persons could be obtained from this source. Although OCD plans do not call for marking and stocking these shelters, their identification and location will help local governments solve their shelter deficiency problems. However, the OCD developed a paper decal for placement on an interior wall of small structures having a protection factor of 40 or higher.

Fallout protection in homes.—For many families, the home can provide considerable fallout protection. At the end of fiscal year 1965, a sample survey of single-family homes was underway. Based on a feasibility test concluded in fiscal year 1964, the survey included about 22,000 homes located throughout the 50 States. Analysis of 17,000 responses received revealed that approximately 55 percent of the homes have basements, of which about 10 percent have a fallout protection factor (PF) of 40 or higher, and more than 75 percent have a PF of at least 20.

Nationwide projection of the results of the sample survey indicates that homes have potential shelter with a PF of 40 or higher for approximately 13.5 million persons and potential shelter with a PF of 20 to 40 for approximately 89 million.

As part of the operations in evaluating this project, an onsite survey of a substantial number of these homes will be made, after which elec-

tronic data processing procedures and instructions can be completed for extending the survey nationwide.

Military overseas shelters.—The OCD, at the request of the Army Deputy Chief of Staff for Military Operations, developed procedures for conducting a fallout shelter survey of overseas military installations. Workshops were held in West Germany, Korea, and Okinawa to train military personnel in survey techniques. A data processing system was developed to handle survey data from military installations, and a new computer program designed for the OCD under contractual arrangements will be used to determine fallout protection factors. As indicated by data developed in the survey, facilities found to have favorable fallout protection and shelteree capacity will be reevaluated, and estimates for improvement of shielding and ventilation will be made as necessary.

Shelter Ventilation

A large resource of potential public fallout shelter can be developed by improving the rate of ventilation in many shelters. An economical and effective technique for expanding the inventory of the nationwide fallout shelter system would be to develop this resource by stocking packaged ventilation kits in public fallout shelters. Such a kit was developed in fiscal year 1964. Further development of this kit in fiscal year 1965 (see *Research*, part VI) resulted in substantially reducing its cost below the previously estimated $2.50 per additional shelteree.

During fiscal year 1965, the OCD conducted a sample survey of presently ventilated public fallout shelters. The purpose of the survey was to obtain data that can be used effectively in estimating the number of packaged ventilation kits required per shelter, and in designing effective methods of distribution and for placement within shelters.

PLANNED SHELTER USAGE

Closely related to expanding the inventory of the nationwide fallout shelter system is the need for planned shelter usage at the community level. This is necessary to assure (1) effective use of all identified and available shelter space and (2) full exploitation of the best available fallout protection that can be located in communities having shelter deficiencies. When this planning is completed, the precise shelter needs that will have to be met through new construction will be known.

Equally important is a third need for planned shelter usage: The effective functional support of shelter operations during civil defense

emergencies. For example, effective shelter usage requires support services such as warning, communications, radiological monitoring, shelter management, medical care, and fire protection. During fiscal year 1965, the OCD promoted planned shelter usage through a series of projects termed Emergency Operations System Development (EOSD). The objective of EOSD is to develop realistic civil defense systems that will assure effective functional support of fallout shelters at the community level in the event of attack. Some of the EOSD projects are described in this section of the report.

Community shelter planning.—Community shelter planning projects were conducted in 57 communities throughout the United States. Through contractual arrangements, the OCD focused the efforts of local urban planners, the U.S. Army Corps of Engineers, and State and local planning agencies, as well as civil defense personnel on developing community shelter plans. This included matching people with specific shelter areas and produced tested management, training, and administrative information that can be disseminated nationwide and used for guidance by each political subdivision in developing an applicable community shelter plan.

Initial OCD studies at Lincoln, Nebr.; Boston, Mass., and San Diego, Calif., were instrumental in developing techniques for assigning people to designated shelters. A prototype test of these techniques, conducted in Montgomery County, Md., primarily by OCD personnel, provided guidance for the 57-community studies. The decision to apply the skills of local urban planners in these nationwide studies was based upon the results of 16 community shelter planning projects, of which 2 were conducted by each OCD regional office.

Direction and control.—Federal, State, and local emergency operating centers are designed to provide the information required for making basic decisions in conducting emergency operations and in using shelters effectively. To provide guidance for effective use of emergency operating centers and for directing and controlling emergency operations, the OCD conducted several exercises during fiscal year 1965.

These exercises simulated emergency operations based upon the results of hypothetical nuclear attacks. Using a simulation laboratory originally built to develop command centers for the U.S. Air Force, the exercises included such typical local governments as San Jose, Calif.; Lancaster County and Lincoln, Nebr.; and Itasca County, Minn. Typical problems presented at the rate of 400–600 per hour included: Too many people attempting to enter specific shelters, roads blocked by collisions, relocation of shelterees threatened by fire while radiation level was high, overcrowded shelters, and shelters with insufficient food and water.

Prompt and effective response to these problems by participating local officials enabled the OCD to develop information helpful in solving key problems involved in emergency operations.

Shelter support functions.—Fiscal year 1965 arrangements, made with several contractors experienced in civil defense work, provided for study and analysis of major shelter support functions at the community level. The first part of this work carried out in fiscal year 1965 included: (1) Application of pertinent research materials, (2) quantitative evaluation of problems that would arise from light, medium, or heavy nuclear attacks, (3) analysis of existing State and local capabilities to cope with these problems, (4) analysis of the cost and effectiveness of alternate possible courses of action, and (5) recommended actions requiring Federal-State-local participation.

The second part of the work, mostly planned during fiscal year 1965, is designed to (1) produce recommended guidance materials based on field tests, (2) develop detailed outlines of training materials, and (3) produce recommended management procedures applicable to each community shelter support system.

Among the major shelter support functions studied and analyzed were the following:

1. *Warning.*—Feasibility of making low-cost modifications in the present warning system to reduce decision-making delays and to improve the dissemination and increase the reliability of warning to the public, pending development of more advanced warning systems.

2. *Movement to shelters.*—Development of techniques and procedures as well as estimates of manpower needs for applying vehicular and pedestrian traffic controls in moving people into shelters.

3. *Shelter management.*—Application of pertinent research and training experience to develop guidance on the number of shelter managers needed in shelters of various sizes and evaluation of the effectiveness of using prepositioned instructions in the absence of trained shelter managers.

4. *Interim solutions to shelter deficits.*—An analysis of shelter deficits in communities and recommendations for interim solutions to the problem of providing the best available fallout protection, pending availability of sufficient shelter space meeting OCD criteria.

5. *Radiological defense.*—Evaluation of radiological monitoring requirements in support of the nationwide fallout shelter system and a detailed plan of the radiological defense system in shelter usage and in transattack and postattack operations.

6. *Rescue.*—Determination of the extent to which rescue of trapped survivors is a feasible shelter support function, and evaluation of various rescue systems and procedures.

7. *Maintenance of law and order.*—Development of operational guidance on law enforcement applicable to all phases of civil defense operations, including requirements for military support of civil defense, and military requirements for civilian police support of military operations.

8. *Local communications.*—Evaluation of communications required in support of shelters and the emergency operations of local governments, with primary emphasis on use of existing public and private local communications capabilities.

9. *Remedial movement.*—Establishment of criteria for guidance in deciding need to relocate shelterees as a result of adverse conditions; e.g., threat of fire, overcrowding, or high level of residual radiation in limited areas.

10. *Engineering and debris clearance.*—Evaluation of need for engineering support of fallout shelters, determination of the scope and nature of this activity and the feasibility of its performance by specific elements of local governments, as well as the need and feasibility of using military support for these operations.

11. *Welfare.*—Evaluation of need for emergency welfare services in support of shelters and, if required, definition of the scope and nature of these services.

12. *Health and medical services.*—Evaluation of need for health and medical services in support of shelters and, if required, definition of the scope and nature of these services.

PROTECTIVE STRUCTURES

Of paramount importance to the effective use of the nationwide fallout shelter system is the protection of people responsible for (1) warning the public, (2) carrying on emergency communications, and (3) directing and controlling civil defense emergency operations. Providing this protection has a high priority in the civil defense program.

Protection of warning points.—Based on a prototype operation started in fiscal year 1964, the OCD continued to furnish financial assistance to State and local governments, as necessary, to provide warning points with fallout protection, emergency power generators, and ventilating equipment. A minimum fallout protection factor of 100 is required, and the equipment must be capable of comprehensive operation in the National Warning System under initial and subsequent attack conditions. (See *Federal Warning System* in part IV.)

During fiscal year 1965, agreements signed with local communities extended this operation to 232 warning points. Also, construction of fallout protection and installation of equipment were nearly completed

for 27 selected warning points covered in the prototype operation of fiscal year 1964; 20 communities already had facilities meeting established criteria for warning points. The cost of this operation in fiscal year 1965 was approximately $1.1 million.

Protection of radio stations.—As the result of financial assistance provided by the OCD, construction of fallout protection for 115 radio stations was completed in fiscal year 1965. This increased to 210 the number of stations provided this protection by means of Federal funds. In addition, nine stations either already had fallout protection or acquired it without expense to the Government.

The purpose of these arrangements is to provide for continuous operation of selected radio stations (see fig. 6) under fallout conditions that may exist after nuclear attack. This would be necessary for dissemination of civil defense information to the public and for emergency operations. Since commercial stations are not normally equipped to operate under fallout conditions, they are provided Federal funds for this purpose. Participants are required to agree to provide and maintain fallout protection and emergency power equipment in their installations as well as special communication links to local emergency operating centers. (See *Emergency Broadcast System* in part IV.) Cost of this operation in fiscal year 1965 was approximately $4 million.

OCD regional operating centers.—All governments need protected sites equipped for conducting civil defense emergency operations. Each of the OCD regional offices serves as an operating center at the Federal level.

The OCD has one permanent protected regional operating center. Located in Region 5, Denton, Tex., and operational since February 1964, the center is the headquarters for peacetime regional civil defense operations. It also houses the regional staff of the Office of Emergency Planning and, in wartime, would serve as an alternate national civil defense operational headquarters. The center has a fallout protection factor of more than 1,000, is blast resistant, and can accommodate an emergency staff of 500.

Pending the construction or location of permanent protected centers for other OCD regional offices, temporary construction completed in fiscal year 1965 provides a minimum fallout protection factor of 100 for emergency communications facilities of OCD Regions 4 and 6. Similar interim protection for the other OCD regional offices is scheduled for completion in fiscal year 1966.

The permanent protected center for Region 1, funded from fiscal year 1962 appropriations, was being designed in fiscal year 1965. The preliminary design provides for an underground structure having a fallout protection factor of 500 as well as blast protection. Where

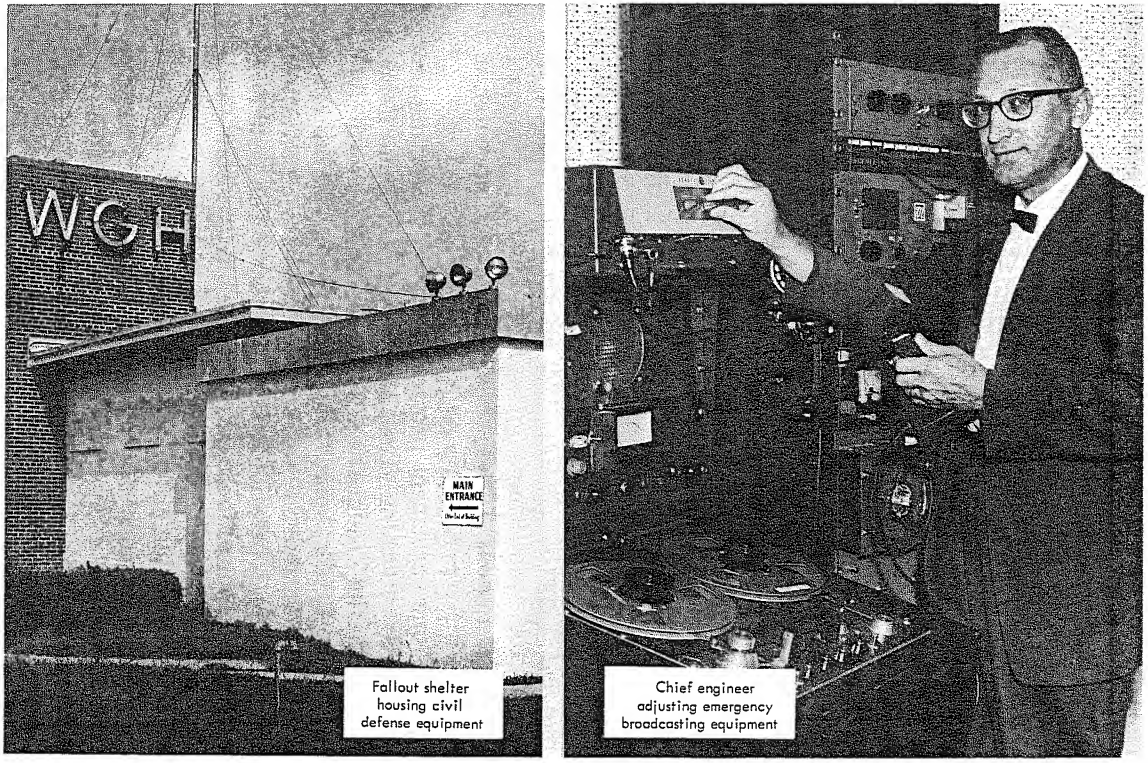


Figure 6.—Radio Station WGH, an Emergency Broadcast System station, Newport News, Va.

sites permit it, this design will be used as a prototype for future construction of other OCD regional centers. Funds for their construction are included in fiscal year 1966 appropriations and excess military sites are being evaluated for possible use.

State and local emergency operating centers.—Federal matching funds obligated during fiscal year 1965 to assist State and local governments in establishing protected emergency operating centers totaled nearly $5.8 million. New criteria for local centers, issued in March 1965, reduced their cost and promoted maximum use of existing protected facilities. The requirements include a fallout protection factor of 100 for the buildings and 85 square feet of space per staff member. Federal assistance includes, as necessary, funds for designing and constructing new centers, modification of existing buildings, and acquisition of equipment.

At the end of fiscal year 1965, 623 State and local centers had been financed by Federal matching funds. Of these, 193 were operational; 73 were constructed but not yet equipped; and 357 were in the planning, design, or construction stage. However, State and local governments, without the use of Federal funds, have established more than 1,000 emergency operating centers and have completed more than 250 additional centers that are in the process of being made operational. (See table 5.) A standard reporting system, established in fiscal year 1965, provided more complete information on these centers than has been available in prior years.

TABLE 5.—*Number of State and local emergency operating centers, end fiscal year 1965*

Type of center	Grand total	Operational			Being completed		
		Type of funding			Type of funding		
		Total	Federal matching	State and local [2]	Total	Federal matching	State and local [2]
Total	1,943	1,262	193	1,069	681	430	251
State	59	28	16	12	31	29	2
State area	74	32	5	27	42	42	0
County	403	171	63	108	232	138	94
City	617	409	64	345	208	97	111
Combined [1]	790	622	45	577	168	124	44

[1] City-county, etc.
[2] As reported to the OCD.

PROFESSIONAL AND TECHNICAL SUPPORT

Professional and technical support of architects and engineers has sustained the establishment and expansion of the nationwide fallout shelter system since it was started in September 1961. OCD work with architects and engineers resulted in the development of slanting techniques late in fiscal year 1964. (See *Architectural and Engineering Design* in part III.) This major breakthrough in design techniques and procedures began to show an impact on shelter development in fiscal year 1965.

Major projects and activities conducted to develop and maintain the professional and technical support of architects and engineers are described in this section of the report.

Fallout shelter analysts.—Approximately 2,500 additional architects and engineers were certified as fallout shelter analysts during fiscal year 1965. This increased the number of OCD certified shelter analysts, whose services are available nationwide, to more than 9,200. Their names are listed in the *National Directory of Fallout Shelter Analysts*, FG–F–1.2, and new technical information is sent to them as it becomes available. The OCD also publishes the *National Directory of Architectural, Engineering and Consulting Firms With Certified Fallout Shelter Analysts*, FG–F–1.3.

The basic course in fallout shelter analysis was taught in 170 classes, on a semester basis, by qualified instructors from universities throughout the country. Since fiscal year 1963, when 65 classes were taught on this basis, the demand for the course has increased rapidly. It was also taught at the U.S. Navy Civil Engineer Corps Officers School and at the U.S. Army Engineer School. To accommodate architects and engineers unable to attend regularly scheduled classes, the University of Wisconsin offered this instruction as a home study correspondence course. Where the demand existed, the course was also taught by traveling instructor teams.

An extension of the basic course in fallout shelter analysis, emphasizing immediate effects of nuclear detonations on structures, was taught in 33 classes with an aggregate attendance of about 700. A course in unique problems of shelter environmental control engineering was taught in 35 classes in which a total of approximately 800 engineers participated.

A total of 540 architects and engineers attended workshops for fallout shelter analysts held in 5 selected cities. These were held in connection with efforts to expand the nationwide fallout shelter system (see *Small structures* under *Special Surveys* in part III) and to assure that shelter analysts conducting the survey of small structures were up to date on the latest techniques in shelter design and analysis.

Procedures placed in operation during fiscal year 1965 promote wider use of certified fallout shelter analysts. Upon request of State and local civil defense officials, the OCD provides the services of a qualified shelter analyst to advise local architectural and consulting engineering firms on the use of slanting in designing new buildings, or remodeling or making additions to existing buildings. This does not include actual analysis and design services, but guidance and advice are offered on how the firms can achieve fallout protection through their own efforts.

In fiscal year 1965, the OCD provided this service 60 times, with the help of 30 certified shelter analysts. Future plans provide for making the service available through colleges and universities in each State. The increasing demand for this service has shown it to be excellent for developing the capability of local firms in slanting as well as for encouraging staff members to enroll in fallout shelter analysis courses.

University projects.—Major projects conducted through contractual arrangements at various universities included:

1. *Architectural and engineering development centers.*—One of these centers was established in each OCD region in fiscal year 1965. They are located at the Universities of Colorado, Florida, and Washington, and at Pennsylvania State University, Purdue University, San Jose State College, Texas Agricultural and Mechanical University, and Worcester Polytechnic Institute.

Each center is organized to use the technical capabilities of the entire university staff to develop information on techniques for providing fallout shelter as a service to planners, architects, and engineers in its geographical area. Principal functions include (1) the screening of architectural and engineering research for applicable shelter information; (2) making the information available in usable form to praticing architects, consulting engineers, and faculty and students; (3) incorporating information, technical data, and methods into educational programs and activities; and (4) identifying the problems of shelter development that require new technical data for solution.

2. *Shelter design studies.*—Contractual arrangements were made with nine universities to provide for study of specific shelter element design problems and preparation of technical reports. The purpose of these reports is to make the findings readily available to architects and engineers for use in their shelter development programs.

During fiscal year 1965, the Schol of Architecture, University of Kentucky, completed a comprehensive design study showing how municipal office buildings can be designed to include emergency operating centers and dual-use public fallout shelters. The purpose of this type of design study is to demonstrate to architects and consulting engineers that, at little or no additional cost, optimum dual-use shelter

space can be incorporated into the design of any building without adversely affecting its appearance or function. In this project, a nationally known architect from each OCD region was teamed with advanced students to design a building to meet the requirements of a specific community. Engineering consultants and fallout shelter analysts were available as advisers to them. The location, community size, and emergency operating center requirements were different in each case. Results of this design study will be published and distributed to architects, engineers, and municipal government officials. This publication will be comparable to that published in fiscal year 1964 as a result of the Rice University design study of incorporating dual-use shelter in industrial buildings.

During fiscal year 1965, a study of selected examples of good architecture was underway at Pennsylvania State University to ascertain how buildings can be redesigned to incorporate dual-use shelter space without adversely affecting their function, appearance, or cost. Buildings for this purpose were selected under the auspices of the American Institute of Architects. The original architect, together with students and fallout shelter analysts, is scheduled to redesign each building during fiscal year 1966. The new design and the cost analysis for each building will be published for use by architects and engineers. Included in the publication will be alternate designs and cost analyses for various degrees of fallout protection proposed, in the design stage, for a Fairfax County, Va., school building.

3. *Faculty development.*—As a result of faculty development activities attended by 70 faculty members from 25 architectural and engineering schools in fiscal year 1965, the number of institutions eligible to conduct fallout shelter analysis and design courses was increased to 120, and the number of qualified instructors to 265.

Summer institutes on nuclear defense design were held for architectural and engineering faculties at the Universities of California, Colorado, and Illinois, and at Montana State College and George Washington University. The institutes were conducted in cooperation with the Association of Collegiate Schools of Architecture, the Engineers Joint Council, the American Institute of Architects, the American Society for Engineering Education, and many other technical and professional organizations.

In conjunction with the annual meeting of the American Society for Engineering Education, held at the Illinois Institute of Technology, the OCD conducted a seminar for deans and department heads of engineering schools. About 180 of these officials were briefed on the mutual benefits brought to universities and to the Nation by OCD-sponsored projects at universities. The briefings were conducted by engineering faculty members who had participated in these projects.

Design competition and technical information.—In April 1965, the American Institute of Architects (AIA) distributed copies of the *National Community Fallout Shelter Design Competition Awards*, TR–28, to architects, engineers, and community planners. This publication presents the winning entries of a nationwide architectural design competition conducted by the AIA for the OCD in fiscal year 1964.

This, the second national architectural design competition, featured the incorporation of dual-use public fallout shelter space in a shopping center. Results of the first competition, featuring the designing of elementary schools with dual-use public shelter space, were published in fiscal year 1963. In fiscal year 1965, the OCD made contractual arrangements with the AIA to conduct a third national competition to feature the incorporation of dual-use public fallout shelter space in community recreational facilities.

The demand for technical publications on protective construction continued throughout fiscal year 1965. The OCD issued 9 new publications during the year, making a total of 38. These included manuals, guides, design and engineering case studies, and technical memoranda and reports distributed to architects, engineers, an others interested in shelter design and construction.

The publication of guidelines for nationwide adoption of building codes favorable to incorporation of fallout shelter in existing and proposed construction is important to the expansion of the nationwide fallout shelter system. Substantial progress in developing the basic material for such a publication was made in fiscal year 1965.

A study, conducted through contractual arrangements with the AIA, is designed to produce (1) recommendations for appropriate building code changes of those requirements found restrictive to the incorporation of fallout shelter in new construction or in remodeling of buildings, and (2) a model building code section on fallout shelters that can be adopted by national building code authorities.

Leading building code authorities cooperating in this project are the Building Officials Congress of America, the National Board of Fire Underwriters, the International Congress of Building Officials, and the Southern Building Code Congress. The work is being coordinated by the AIA National Committee on Building Regulations.

COMPLEMENTARY CIVIL DEFENSE SYSTEMS

Well-defined operational systems that complement the nationwide fallout shelter system are: Civil Defense Alerting and Warning, Communications, Monitoring and Reporting, and Damage Assessment. These systems are essential to effective use of fallout shelters and to preattack planning and postattack operations. The status of these systems at the end of fiscal year 1965 is described in this part of the report.

CIVIL DEFENSE ALERTING AND WARNING

The Office of Civil Defense is responsible for alerting Federal agencies and State governments in the event of developments that call for actions to increase the Nation's readiness posture. Procedures have been established for disseminating appropriate alert notices within the Federal establishment and to the States. These procedures are tested weekly at the national level and at least quarterly at the regional level, either separately or as a part of military or civil defense exercises.

Federal warning systems are designed for disseminating warning to strategic points from which State and local governments are responsible for warning the public. A Civil Defense Warning System (CDWS) operates throughout the continental United States, including Alaska. The CDWS, using the most reliable communications facilities available, brings together Federal, State, and local warning systems to form a huge warning network. Separate warning systems serve Hawaii, American Samoa, Guam, Puerto Rico, and the Virgin Islands.

Federal Warning Systems

National Warning System.—The Federal portion of the CDWS serving the continental United States is the National Warning System (NAWAS). (See fig. 7.) From 3 OCD Warning Centers, continuously manned and operated by warning officers, warnings and warning information can be sent to OCD regional offices and to 685 warning points. The primary National Warning Center is at Ent Air Force Base, Colorado Springs, Colo.; alternate ones are the National Two Warning Center at Federal Center, Denton, Tex., and the National

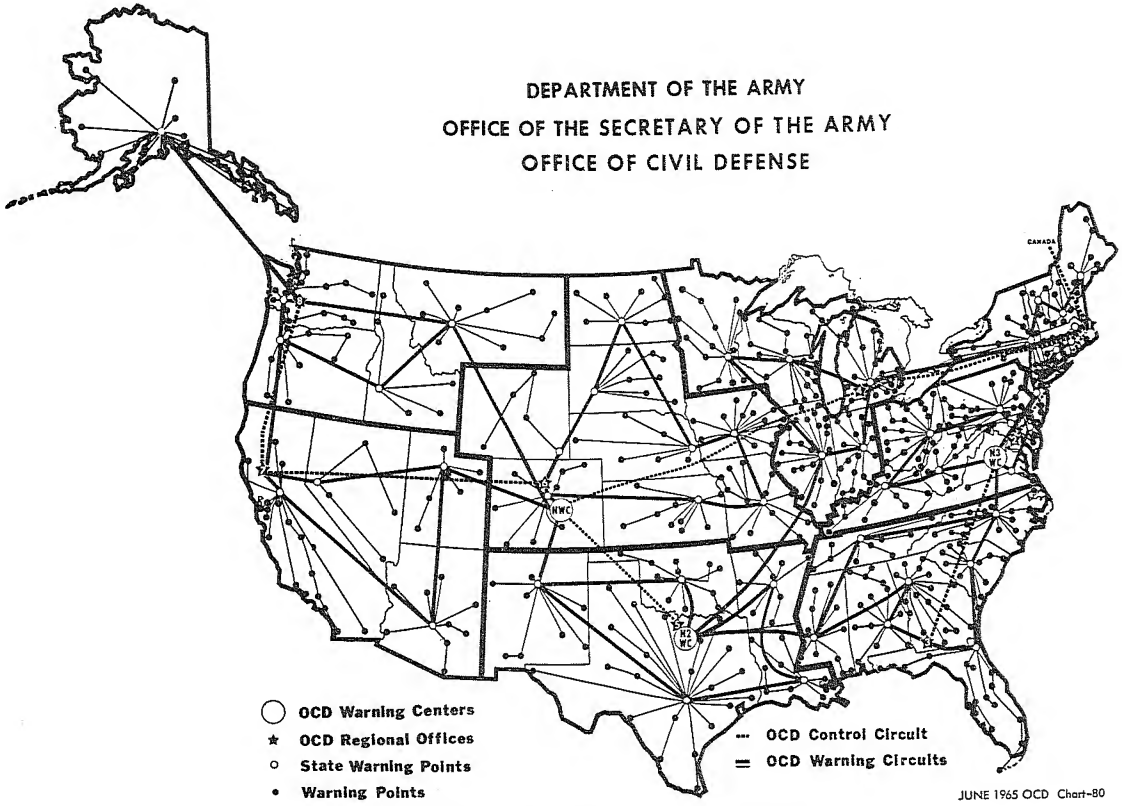


Figure 7.—National Warning System (NAWAS).

Figure 8.—Warning flow chart for the continental United States.

Three Warning Center near Washington, D.C. Using a special voice communications system, they can directly and simultaneously alert OCD regional offices and the 685 warning points within a few seconds. These warning points are at key Federal locations and in State capitals and numerous other cities, and warnings can be sent from them to the public via State and local warning systems. (See fig. 8.)

A major NAWAS improvement, completed on May 1, 1965, was a realinement of the system which included a reduction in the number of OCD warning centers from nine to three. This realinement increased the flexibility and reliability of NAWAS operations, permitting them to be carried out from protected sites with greater economy and with better manpower utilization. To extend warning facilities to additional Federal installations and improve warning coverage, 64 warning points were added to NAWAS, making a total of 685. Arrangements were also made to provide fallout protection for additional warning points (see *Protective Structure* in part III), and NAWAS was extended to include 13 cities in Alaska.

Washington Warning System.—This system, serving the Washington, D.C., metropolitan area, was strengthened by the addition of several sirens, making a total of 289. The system includes facilities for voice communications with local civil defense headquarters in the area as well as with certain Federal civilian and military installations.

Warning for Hawaii and United States possessions.—Warning facilities at appropriate military installations serve these areas. A Federal warning system serving warning points in Hawaii also extends to Guam and American Samoa; another Federal system serves points in Puerto Rico and the Virgin Islands.

Indoor warning systems.—During fiscal year 1965, preliminary studies were completed for the development of a radio warning system that would immediately alert the public of impending attack. These studies enable the OCD to determine the operational requirements for the system as well as its component elements and pattern of operations. Contractual arrangements were made to provide the services and equipment necessary for engineering development and field-testing critical elements of the system.

Under contractual arrangements made previous to fiscal year 1965, studies and tests were completed on the National Emergency Alarm Repeater (NEAR) system, which relies upon the use of electric powerlines for indoor warning. Upon completion of comparable development and testing of the radio warning system, information will be available on the use of that indoor warning system.

State and Local Warning Systems

State and local governments provide a variety of communications facilities for sending warning and supplemental information from the 685 NAWAS warning points to thousands of local warning points. Telephone, teletypewriter, and radio circuits, as well as specially devised warning systems are used for this purpose. The OCD continued to provide guidance and financial assistance to States and their political subdivisions for the purpose of strengthening their warning systems. By means of Federal matching funds, NAWAS extensions have been installed at 262 locations important to local civil defense organizations.

The telephone and radio are widely used for alerting local civil defense personnel and government officials. Local warning systems include both indoor and outdoor devices to alert the public. The siren is a common outdoor warning device. Less common, but equally effective, are horns, whistles, and voice sound systems. Indoor warning devices include telephone, radio, and various commercial communication facilities, such as public address systems and circuits for transmitting background music to public places.

COMMUNICATIONS

Communications systems of special importance to the OCD are those designed for conducting civil defense operations and for addressing the public during emergencies.

Operational Communications

Primary system.—The basic means for transmitting OCD operational communications is the Civil Defense Telephone and Teletype System, designated by the acronym NACOM 1, and formerly called National Communications System No. 1. (See fig. 9.) It is specifically designed for speed, flexibility, and continuity of service required for civil defense emergency operations. The system includes leased telephone and teletype services connecting OCD national and regional headquarters and the State civil defense offices. NACOM 1 is the primary means of communication for coordinating Federal and State civil defense emergency operations. Its connections also extend to emergency relocation sites of selected Federal agencies, and it can be interconnected with commercial, military, and other Federal teletype communications systems.

Fiscal year 1965 improvements in NACOM 1 included the installation of separate circuits between OCD regional offices and State offices to permit simultaneous transmission of voice and teletype messages. Circuits formerly used permitted only alternate transmission of tele-

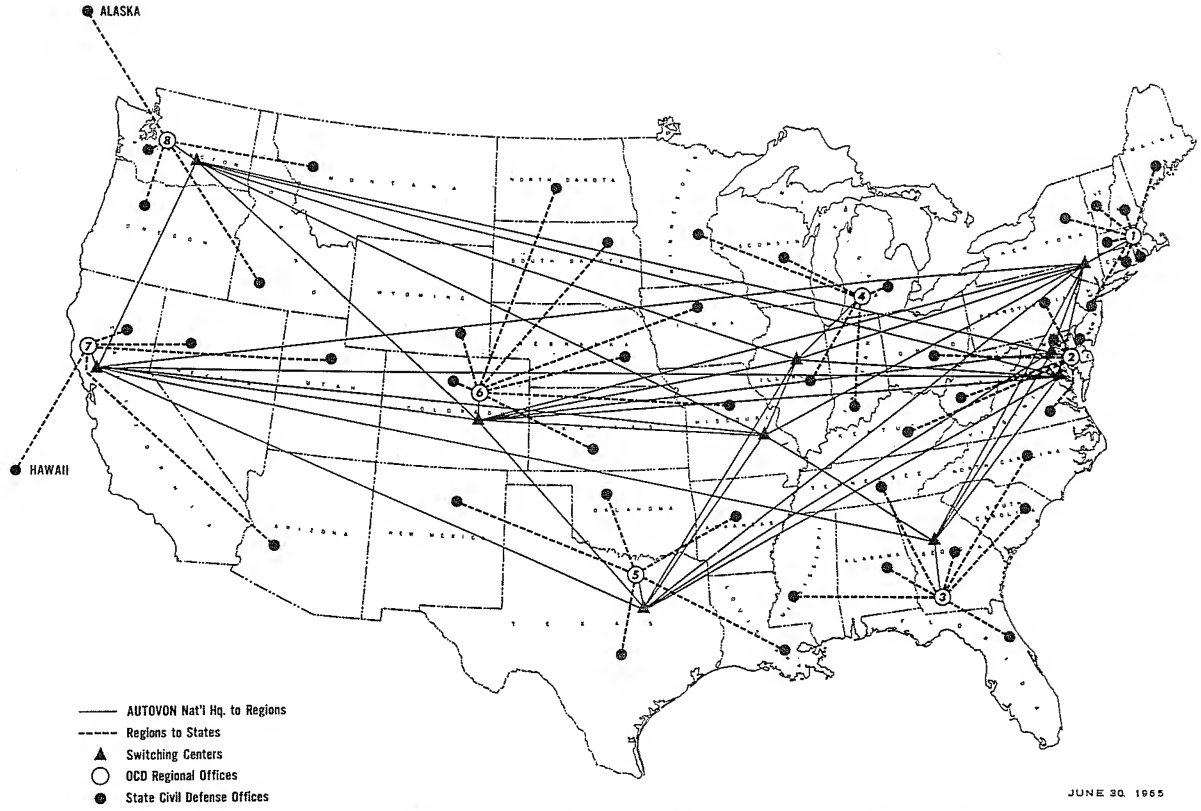


Figure 9.—Civil Defense Telephone and Teletype System (NACOM 1).

phone and teletype messages. All OCD regional offices were also equipped with transmission facilities for conducting voice conferences. Communication centers of OCD Regions Four and Six were relocated in fallout protected areas. (See *Protective Structures* in part III.) All OCD regional offices were provided direct teletype connections with the Defense Communications System, and General Services Administration teletype connections were installed at six OCD regional offices.

Alternate system.—The Civil Defense Radio System, designated by the acronym NACOM 2 and formerly called National Communications System No. 2 (see fig. 10), is the backup system for NACOM 1. Control facilities for both systems are located in the same area to make them equally available. NACOM 2 is a high frequency radio network for transmission of voice, code, and radioteletype messages.

At the end of fiscal year 1965, NACOM 2 remained operational at an OCD emergency relocation site and at all OCD regional offices. The system was extended to 1 State, making it operational at 24 State installations and in Puerto Rico; contractual arrangements were made to extend its operations to 16 additional States. Other improvements included the installation of two receiver-transmitter radios each at OCD Regions Four and Five communication centers.

Emergency Broadcast System

A total of 2,361 broadcast stations were participants in the Emergency Broadcast System (EBS) at the end of fiscal year 1965. This system is designed for communicating with the public during civil defense emergencies. The order of priority would be, first, for Presidential messages; second, for local instructions; third, for State programing; and fourth, for national programing and news, including regional coverage.

In accordance with Executive Order 11092 of February 26, 1963, management of the EBS is primarily a responsibility of the Federal Communications Commission, and the plan for its operation is based on requirements of the White House, the Office of Emergency Planning, and the Office of Civil Defense.

Throughout fiscal year 1965, the OCD continued to work with selected EBS radio stations to help prepare them to remain operational under civil defense emergency conditions. (See *Protective Structures* in part III.) During fiscal year 1965, the owners of 231 additional EBS stations signed agreements to provide fallout protection and to obtain and maintain equipment for this purpose. This increased the number of participating stations to 540. Of these, 219 had completed construction for fallout protection and 137 of the 219 had also provided required equipment.

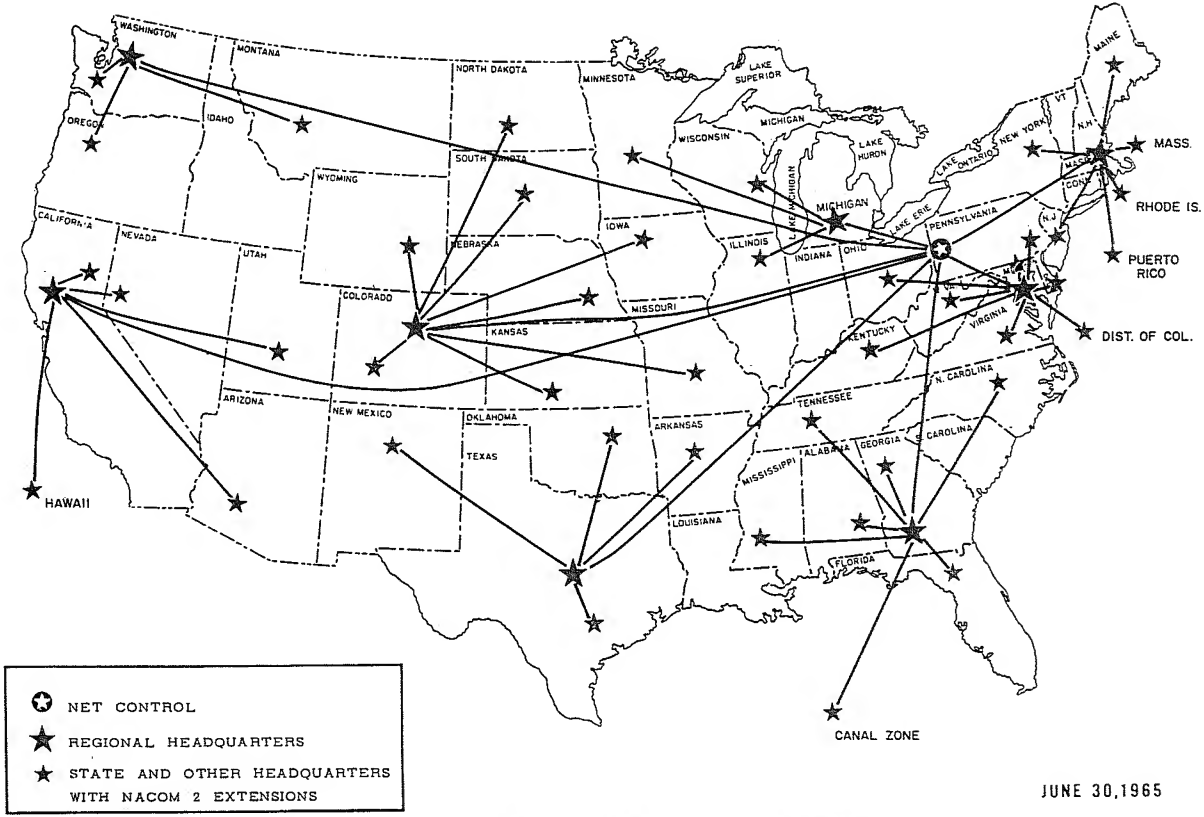


Figure 10.—Civil Defense Radio System (NACOM 2).

Support of State and Local Systems

The OCD continued to assist State and local governments to strengthen their communication systems by providing Federal matching funds and technical guidance for development of emergency communication facilities.

The Radio Amateur Civil Emergency Services (RACES) continued to be an important emergency supplement to State and local communication systems. RACES, operational since 1952, enables amateur radio operators to perform emergency communication functions in accordance with State-approved plans. At the end of fiscal year 1965, RACES remained operational in every State and included more than 1,750 approved plans.

RADIOLOGICAL MONITORING AND REPORTING [1]

The extent, intensity, and duration of radioactive fallout hazards following a nuclear attack would have a controlling influence on all aspects of civil defense emergency operations. A nationwide radiological monitoring system, designed to collect and evaluate this information for dissemination to all levels of government, is basic to rendering sound decisions for conducting these operations. Major operational elements of this system include the radiological monitoring staff and equipment in public fallout shelters and at strategically located monitoring sites, as well as personnel at emergency operating centers, to process and evaluate the fallout data, and personnel and facilities to maintain and calibrate radiation instruments.

Operational Status

Monitoring stations.—During fiscal year 1965, 673 Federal radiological monitoring stations were established, increasing their number to 10,206. The number of State and local monitoring stations was increased by 6,259, making a total of 44,968; thus, a grand total of 55,174 Federal, State, and local stations were operational by the end of the year. (See fig. 11.) An estimated 150,000 monitoring and reporting locations are needed to complete the radiological monitoring and reporting system.

The OCD has provided one radiological defense operational set CD V–777 (see fig. 21 in app. 2) for each monitoring station meeting minimum requirements. These include suitable geographical location, fallout protection, adequate communications facilities, and at least two trained radiological monitors. Some stations are located in public fallout shelters that meet these requirements. In these instances, the monitoring staff would perform both shelter and opera-

[1] See app. 5 for statement on chemical and biological defense.

tional monitoring functions. Upon completion of their primary assignments, shelter monitors would be reassigned to help carry out radiological monitoring and reporting functions.

Some monitoring stations are located at facilities of Federal agencies that have been assigned civil defense responsibilities by Executive orders. Some are located at State facilities, but the majority, established by local governments, are at local sites. However, all stations would supply local governments with fallout data pertaining to their areas of operations. In addition, certain Federal stations would transmit fallout data to the OCD.

Late in fiscal year 1965, additional radiological defense equipment, monitoring support set CD V–777A, was made available to selected monitoring stations. The support set includes a remote-reading, high range survey meter that permits radiation measurements to be taken at

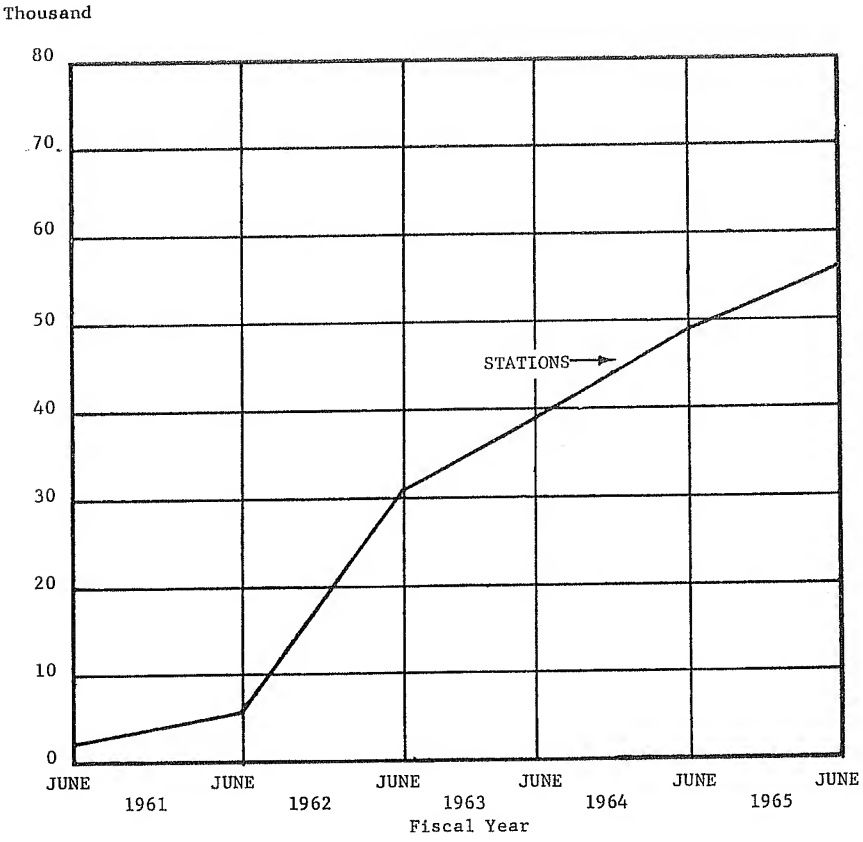


Figure 11.—Growth in number of Federal, State, and local radiological fallout monitoring stations.

a distance of 25 feet, lessening the exposure hazard to monitors operating in areas of high radiation intensity. The set also increased the availability of radiological instruments to stations responsible for extensive mobile or aerial support operations. The remote-reading survey meter was also made available, separately, to selected monitoring stations meeting special qualifications but not in need of the other instruments in the support set.

Shelter monitoring.—During fiscal year 1965, 15,669 public fallout shelters were supplied with radiation kit CD V–777–1 (see app. 2), increasing the number of shelters having at least one of these kits to 67,625. At least two trained radiological monitors are scheduled for each of these shelters.

Radiological monitoring in public fallout shelters would provide radiation data vital to the welfare of shelterees following nuclear attack. Based on these data, the best protected shelter areas in facilities would be used; adjoining areas of facilities would be monitored to determine the advisability of their use to alleviate overcrowding. The information would also be used to determine radiation exposure of shelterees as well as the need for decontaminating those entering the shelter during the fallout period. Finally, using these data, officials at the emergency operating center can direct relocation movements to other shelters, should conditions warrant it.

Aerial monitoring.—Information on the availability of aerial radiological monitoring equipment for State and local use was published in fiscal year 1965. With interim reliance upon the use of standard radiological instruments in operational set CD V–777, monitoring stations located at airports are capable of aerial monitoring. During fiscal year 1965, the OCD received delivery of 1,065 CD V–781 aerial survey meters as the result of procurement initiated in fiscal year 1963. At the end of fiscal year 1965, nine of these instruments had been distributed to State and local civil defense organizations.

Aerial monitoring is designed to compensate for fixed monitoring stations that would be rendered inoperable by damage during nuclear attack and for surface mobile monitoring operations hampered by excessive radiation. In addition, aerial monitoring would be the means for rapidly obtaining early data on which to plan immediate emergency operations, and it would be the only practical means of rapidly monitoring farming and grazing lands, as well as other large rural areas.

Postattack radiation exposure control.—During fiscal year 1965, 726,049 dosimeters and 35,287 dosimeter chargers were distributed to the States for use by civil defense emergency workers. This increased the total distribution of dosimeters to more than 1.6 million and dosimeter charges to more than 70,000. These instruments are distributed

to States for redistribution to public shelters, emergency operating centers, and other sites where they would be available to emergency personnel for measuring the cumulative radiation to which they have been exposed during postattack operations. The extent of their exposure could thus be observed and precautions taken to avoid excessive radiation.

Fallout forecasts.—Under OCD contractual arrangements, the U.S. Weather Bureau continued to disseminate data on upper wind observations throughout the continental United States. This information, transmitted twice daily to several hundred cities, is available for guidance and redistribution as needed and can be used at emergency operating centers to develop fallout forecasts.

Instrument inspection, maintenance, and calibration.—By the end of fiscal year 1965, the OCD had established a federally funded inspection, maintenance, and calibration program in 34 States and the District of Columbia. This operation, making maximum use of the Army National Guard, was based on experience gained from a pilot project conducted under contract with the State of Nebraska in fiscal year 1964. Other States and Federal agencies without maintenance facilities were served at federally operated repair depots.

Readiness of the radiological monitoring and reporting system requires that radiological monitoring instruments be inspected frequently, calibrated periodically, and repaired promptly when found to be operationally unreliable. Radiological monitors are responsible for checking the operational performance of the instruments at least bimonthly and taking necessary action for repair or replacement.

Training and Technical Guidance

At least two trained radiological monitors were scheduled for each of the 55,174 monitoring stations in operation by the end of fiscal year 1965. Many stations had two additional trained monitors to provide for 24-hour emergency operations. Some monitors were trained at U.S. Army bases, and others through the Civil Defense Adult Education Program. Monitor instructors were trained at OCD schools and by means of State college and university extension courses. (See *Training and Education* in part V.) The OCD continued to provide State and local governments with technical guidance for planning, implementing, and operating radiological defense systems by publishing standard operating procedures and instructions in the *Federal Civil Defense Guide.*

Instrument Procurement and Distribution

During fiscal year 1965, contracts were awarded in the amount of $0.5 million to procure equipment, including spare parts and shop

tools, as well as testing apparatus for calibration and maintenance of radiological instruments. (See fig. 12.)

More than 922,000 radiological instruments were distributed in fiscal year 1965, making a cumulative total of nearly 3 million, as follows:

To States for public fallout shelters	363, 950
To States for operational purposes	1, 983, 295
To States and Federal agencies for training and other purposes	592, 570
Total	2, 939, 815

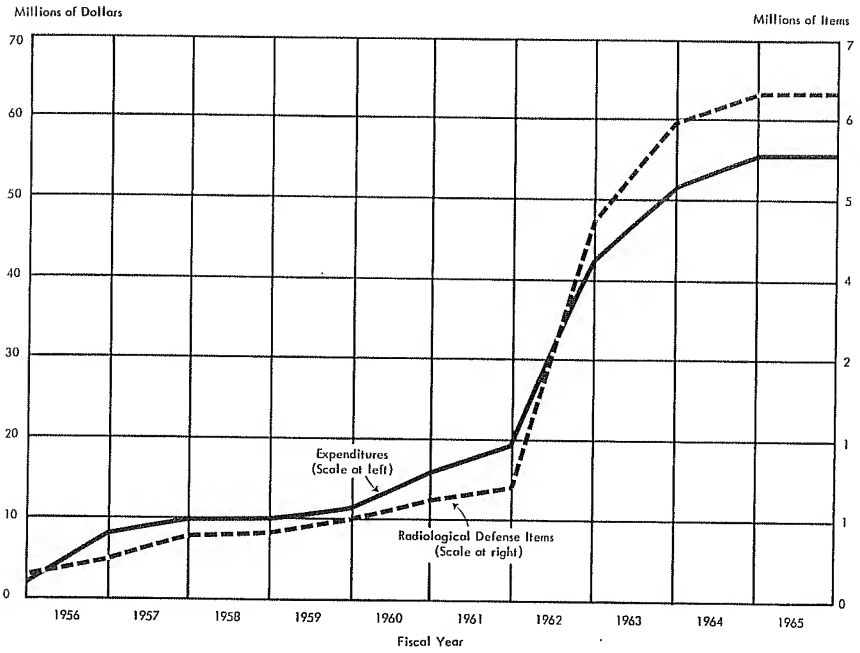


Figure 12.—Procurement of radiological defense instruments.

DAMAGE ASSESSMENT

Readily available information on the population and on other resources remaining after attack would, in large measure, be a basis for determining the most effective actions that could be taken to achieve national survival and recovery. This information would be needed by governments at all levels to make basic decisions for conducting emergency operations. Responsibility for developing plans and operating systems for nationwide postattack assessment of damage devolved upon the OCD as a result of Executive Order 10952, July 20, 1961. Federal departments and agencies, in consonance with other Executive orders and OCD plans and programs, are responsible for

maintaining damage assessment capabilities related to their normal functions, and for providing pertinent data to the Department of Defense, OCD.

Plans and Systems

The OCD continued to develop and improve damage assessment plans and systems as the most productive source of guidance for post-attack survival operations. Preattack guidance for this purpose is derived from the results of vulnerability analyses based upon probability studies of possible effects of various enemy attacks. Post-attack damage assessment data would reflect the effects of the actual attack.

Preattack assessment.—A cost effectiveness study, comparing the damage limiting capability of shelters with that of other defense systems, was completed in fiscal year 1965. Other damage limiting studies produced estimates of the number of fatalities corresponding to various combinations of hypothetical attacks and protection afforded by shelter facilities. Studies were also designed to show the damage to selected resource categories that would result from variations in attack patterns.

Data derived from these and numerous other studies form the basis for civil defense planning. They are also used as guidance by (1) Federal agencies, such as the Departments of Agriculture, and Health, Education, and Welfare, for civil defense support planning and (2) State civil defense offices for operational planning within their jurisdictions.

Postattack assessment.—The amount of damage to human and material resources and an evaluation of those remaining would determine the most feasible survival operations conducive to recovery after an attack. The OCD therefore continued to provide all levels of government with guidance and reference data necessary for conducting post-attack damage assessment operations.

The OCD Damage Assessment System is designed to develop initial postattack damage estimates quickly for national and regional use by means of centrally located automatic data-processing computers. An independent and rapid method of estimating postattack damage to resources in standard metropolitan statistical areas is the Lattice Assessment Program (LAP) which was developed by the OCD in fiscal year 1964. This method permits rapid manual damage assessments. It is based on computing and graphing quantitative amounts of selected resources within 2.5 kilometer square areas and provides (1) a primary method of damage assessment for State and local governments and (2) an alternate source of damage assessment data to that of computer printouts at national and regional levels.

More accurate estimates of damage than those initially obtainable from automatic data computers would be derived from comparison of preattack and postattack photographs of damaged areas. This phase of damage assessment is contingent upon aerial reconnaissance, a responsibility of the U.S. Air Force.

Information obtained from onsite inspection would be the basis for the final and most accurate damage assessments. In accordance with OCD arrangements, the Bureau of the Census is developing sampling techniques and enumeration procedures for the purpose of providing reasonably reliable estimates of the postattack population of the entire country and of each State and OCD region.

Survival Resources and Requirements

In consonance with Executive Order 10952, the OCD continued to work with Federal agencies and other organizations to program resources for civil defense emergency operations and to develop plans and procedures for meeting postattack requirements. This work is paramount in providing State and local governments with postattack assistance, including water supply, debris clearance, health, traffic, and police capabilities, as well as emergency repairs to vital facilities and utilities.

In response to a request from the Office of Emergency Planning, the OCD prepared estimates of postattack requirements for health resources, fuel, food, water and electric power service, manpower, and housing. Nationwide civil defense postattack requirements were also developed by participating in a national exercise dealing with the effects of a hypothetical nuclear attack.

Further improvements were made in the operational planning of policies and programs to implement a nationwide postattack system for claiming emergency survival supplies at national and regional levels to meet emergency operational deficiencies at State and local levels. Recommendations for meeting postattack deficiencies for civil defense operations are based on supply-demand requirements developed by the OCD in cooperation with other agencies. Throughout fiscal year 1965, the OCD continued to work in coordination with the Office of Emergency Planning and other appropriate Federal agencies on developing and refining techniques and procedures for determining emergency supply demands and on providing data on survival resources and services that would be needed under various emergency conditions.

Data Base Operations

The OCD data base is the information on survival resources which, when combined with information on enemy threat or attack, provides

guidance for improving preattack civil defense readiness and a basis for directing postattack survival operations. During fiscal year 1965, the OCD data base was updated and expanded to include additional information on resources essential for survival.

Major resources covered by the data base include population; fallout shelter data; food, medical, and fuel supplies; engineering and construction equipment; selected military systems; utilities systems; and medical, health, and educational manpower and facilities. Information on these resources was furnished to the OCD principally under contracts with military departments and civilian Federal agencies. Portions of the data base were also acquired from the National Resource Evaluation Center and the National Military System Support Center. Major data base improvements during fiscal year 1965 are described in the paragraphs that follow.

The Bureau of the Census worked on developing statistical sampling techniques for promptly obtaining estimates of the postattack population of each State and OCD region as well as of the entire Nation. Procedures contemplated for this purpose include the development of a kit with instructional materials to be used as directed by the Bureau of the Census. The kits would be stored at selected field facilities during the preattack period.

The Public Health Service of the Department of Health, Education, and Welfare (DHEW), in cooperation with the Housing and Home Finance Agency, continued to expand and revise the inventory of water supply systems. Maps and hydrological data were being revised for water supply systems serving both large and small communities. In addition to showing vulnerable components of the systems, the maps and accompanying information will show alternate supply sources, standby power for pumping stations, and interconnecting pipelines. The water supply inventory is an important part of the data base not only for postattack damage assessment purposes but also for expediting postattack emergency repairs and decisions relating to relocation of postattack survivors. This information is essential for preattack planning by the Office of Emergency Planning and other Federal agencies.

The Public Health Service of DHEW worked on compiling an inventory of chemical and biological laboratories with capabilities for diagnosing human and animal diseases in addition to isolating and identifying vectors and crop diseases. Upon completion, this project will provide data-base information that will be helpful in developing a network of epidemiological laboratories as well as in conducting damage assessment.

FEDERAL ASSISTANCE PROGRAMS AND ACTIVITIES

Federal assistance extended to State and local governments is managed by the OCD to assure the efficient and economical development of maximum civil defense capabilities. Technical assistance and guidance are provided in support of all Federal assistance activities and programs. These include those designed to train key personnel and educate the public for civil defense as well as those that provide Federal matching funds and surplus Federal property in support of civil defense programs.

TECHNICAL ASSISTANCE AND GUIDANCE

Management control.—Management of all aspects of Federal assistance to State and local governments is expedited by an annual program paper and related semiannual progress reports. Each political subdivision is required to submit these documents to the OCD as a prerequisite to participating in any civil defense Federal assistance program or activity. Approximately 4,300 participants, representing most of the population, submitted these documents in fiscal year 1965.

The fiscal year 1965 preprinted program paper and related reports contained 124 local activities considered essential to a well-balanced civil defense program. These activities cover public fallout shelter stocking, training of shelter managers and radiological monitors, establishment of emergency operating centers, and other essential requirements. These documents provide State and local governments firm guidance on actions required for an effective civil defense program, and, completely executed, they supply the OCD with information on estimated needs, actual accomplishments, and planned gains anticipated in the ensuing fiscal year.

During fiscal year 1965, the substance of the program paper was revised for fiscal year 1966 to reflect current and projected civil defense goals. Also, to provide for more convenient and comprehensive reporting, the reporting format was revised into a matrix design, with provision for a narrative supplement, covering work accomplished and work to be done. Review of the program papers by State and OCD officials in fiscal year 1965 resulted in providing local governments

with more effective direction in improving their civil defense readiness.

The mass of data derived from the program papers was summarized by automatic data-processing techniques to provide OCD regional and State offices information not previously available for use in program management. An interim information system was designed for this purpose during fiscal year 1965. OCD plans call for further development of this system, using advanced automatic data-processing techniques, to produce management reports designed to identify communities in need of special assistance. These reports, based primarily on data from the program paper, will be supplemented by information available to the OCD from other sources.

Policy and operational guidance.—Guidance was provided to Federal agencies and State and local governments by individual contacts and by group briefings. But the *Federal Civil Defense Guide* (FCDG), with publications of an operational or program nature keyed to it, remained the principal medium for this purpose. Several major additions to the FCDG were issued during fiscal year 1965. Some of the topics covered were:

1. *Increased readiness.*—The Cuban crisis of 1962 illustrated the need for more definitive guidance on accelerating State and local action to meet emergencies. *Actions for Increased Civil Defense Readiness*, FCDG, part G, chapter 5 and its appendixes, provides guidance on the actions that should be taken and explains how they can be expedited in proper sequence.

2. *Basis of civil defense.*—The concepts upon which civil defense can develop readiness programs and operational plans for use in case of nuclear attack are presented in *Basis of the Civil Defense Program*, FCDG, part A, chapter 1.

3. *National civil defense.*—Basic assumptions, objectives, responsibilities, and emergency operations concepts are presented in *The National Civil Defense Program*, FCDG, part A, chapter 2.

4. *Military assistance.*—The relationship between military and civil defense responsibilities and operations is clarified in *Military Assistance to Civil Defense*, FCDG, part G, chapter 3.

Emergency operations plans and readiness exercises.—During a civil defense emergency, Federal assistance to State and local governments would be provided in accordance with OCD emergency operations plans. Plans for this purpose were developed at both national and regional OCD headquarters in fiscal year 1965. Federal agencies and State and local governments are scheduled to participate in a nationwide exercise in fiscal year 1966 to test and evaluate these plans.

A series of exercises started prior to fiscal year 1965 was completed by the end of the year. All the States, the District of Columbia, Puerto Rico, many State agencies, and approximately 1,400 local gov-

ernments participated in some portions of these exercises. In fiscal year 1965, these exercises included seminars conducted at each governmental level to identify operational problems and to study readiness features to be tested. Principal operations included were the warning, communications, radiological defense, damage assessment, and fallout shelter systems.

The first of these exercises scheduled for fiscal year 1965 was related to a worldwide military exercise. Although canceled on October 2, 1964, this exercise produced useful results through seminar preparations completed in September by OCD headquarters and several regional offices, as well as by some State and local offices.

Under the guidance and management of OCD regional directors, emergency operating center readiness exercises were conducted at times suitable to State and local governments during the period January through March 1965. Followup exercises, conducted under similar arrangements during the period April through June 1965, concluded the series. In addition, the OCD completed preparations for future exercises.

Military Standby Reserve officers.—At the end of fiscal year 1965, State and local civil defense offices had requested the services of 7,699 officers; 3,826 officers were available and 2,236 had been assigned civil defense duties. Based on a fiscal year 1962 decision by the Secretary of Defense, Standby Reserve officers may acquire retirement credit for voluntary participation in civil defense work. However, reservists frequently are unavailable in localities where their services are requested.

The American National Red Cross (ANRC).—In accordance with continued contractual arrangements, advisory services of the ANRC were made available at OCD regional offices to State and local governments. These services helped strengthen local civil defense efforts by promoting effective use of local ANRC chapters in civil defense training and fallout shelter projects as well as in incorporating the resources of other community agencies to the best advantage of civil defense.

National Defense Transportation Association (NDTA).—As the result of a fiscal year 1964 agreement between the NDTA and the Department of the Army, OCD, local governments continued to make arrangements with local NDTA chapters for voluntary use of transportation facilities and personnel for civil defense purposes. At the end of fiscal year 1965, these arrangements had been completed in 56 metropolitan areas. In 32 communities, shelter supplies, totaling 500 tons and sufficient to accommodate 2.5 million persons, were moved from warehouses to public fallout shelters with the help of local NDTA chapters. For readiness planning purposes, 80 NDTA chap-

ters have completed a survey of available transportation equipment. In addition, through arrangements with NDTA chapters, emergency transportation was readily made available in several major disaster areas during fiscal year 1965.

TRAINING AND EDUCATION

Training and education activities of the OCD are designed to support civil defense operations nationwide at all levels of government and to provide civil defense education to the public. Achievement of these goals entails the training of key leaders for planning and directing civil defense operations in major political subdivisions, as well as training personnel in operational skills and offering civil defense instruction to the public. The preparation of suitable training materials and the accomplishment of actual instruction are basic elements of these activities.

This section of the report identifies the major OCD training and education activities and outlines fiscal year 1965 progress. Federal financial support was provided for OCD-approved State and local training activities. (See *Financial Assistance* in part V.) This is an important element in helping the States obtain instructors and training material for strengthening their training capability.

Professional and Technical Training

Professional training of key leaders is primarily focused on planning and directing civil defense operations. Technical training of civil defense workers is mainly focused on the skills required to carry out these operations. The major means used by the OCD in fiscal year 1965 to provide both types of training were the three OCD schools, the extension divisions of 52 State universities and land grant colleges, 25 Army posts, and a portion of the Civil Defense Adult Education Program.

OCD schools.—During fiscal year 1965, 3,447 key Federal, State, and local civil defense personnel were trained at OCD schools, making a cumulative total of 25,838 since fiscal year 1960. In fiscal year 1965, a total of 132 classes were conducted: 46 at OCD Staff College, Battle Creek, Mich. (see fig. 13), with 1,516 graduates; 46 at Eastern Training Center, Brooklyn, N.Y., with 892 graduates; and 40 at Western Training Center, Alameda, Calif., with 1,039 graduates.

Courses regularly offered included:

1. Civil Defense Management
2. Advanced Civil Defense Management
3. Civil Defense Planning and Operations
4. Shelter Management (Instructor)

5. Community Shelter Planning
6. Radiological Monitoring for Instructors
7. Radiological Defense Officer I
8. Radiological Defense Officer II—Decontamination

Special courses were offered in support of the Civil Defense Adult Education and the University Extension Programs. Included, also, were seminars and workshops conducted for U.S. Civil Defense Council members, industrial civil defense personnel, Stanford University staff, DHEW employees, U.S. Army Corps of Engineers and U.S. Navy Bureau of Yards and Docks shelter survey personnel, State military staffs, and the Army National Guard of Nebraska.

Analysis of OCD plans for nationwide community shelter development indicated the need for greater training support of this effort. To help provide this in fiscal year 1966, contractual arrangements were made with the University of Tennessee to assist the OCD Staff College by administering training in community shelter planning. This includes conducting Staff College courses in community shelter planning techniques for urban planners and government officials, as well as furnishing consultants to the Staff College faculty on urban and community shelter planning.

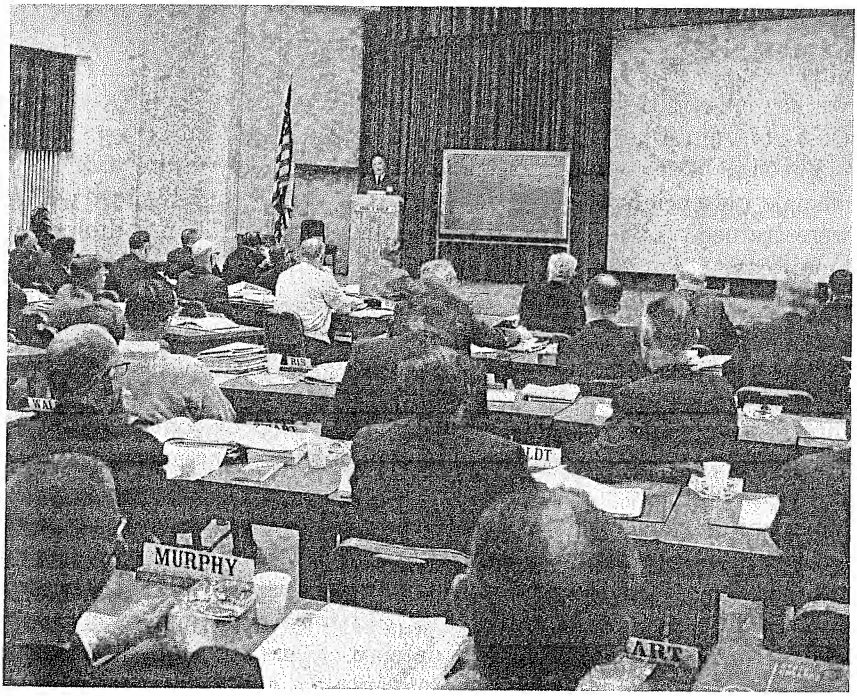


Figure 13.—Instruction in progress at OCD Staff College.

The 2-week *Civil Defense Planning and Operations* course was revised to form a sequence of three 1-week courses. The third 1-week course, planned for fiscal year 1966, includes an emergency operating center exercise. This exercise was developed at the Western Training Center in cooperation with Stanford Research Institute (SRI). Under contractual arrangements, SRI assisted in designing a simulated emergency operating center, as well as a model city, complete with resource data. SRI also helped to outline an instruction plan and served as consultant in testing it.

Other activities at OCD schools included: (1) Preparation of instructional material on civil defense management and radiological defense for use in the University Extension Program, (2) initial work on preparation of a correspondence course for State and local civil defense personnel, (3) continued provision of technical guidance on production of training films, and (4) assistance in evaluating a radiological achievement test to be used in training radiological monitoring instructors.

Civil Defense University Extension Program (CDUEP).—During fiscal year 1965, the CDUEP brought civil defense training to 46,341 State and local personnel, making a total of 79,985 personal training contacts through this program since its inception in fiscal year 1963. Operating through the extension divisions of State universities and land-grant colleges, the program in fiscal year 1965 included contracts with 52 universities and colleges located in the 50 States, the District of Columbia, and Puerto Rico.

Through 651 conferences, a total of 32,203 key State and local officials were briefed on civil defense. In 584 classes, 7,464 instructors were trained: 3,390 in shelter management and 4,074 in radiological monitoring. In addition, refresher training in radiological monitoring was given to 175 instructors in 18 classes.

Beginning in fiscal year 1965, the CDUEP was extended beyond training instructors and the briefing of public officials. In 362 classes, 6,095 shelter managers were trained, and in 22 classes, 335 radiological monitors were trained. By special modification of contracts in two instances, three classes conducted in civil defense management resulted in 68 graduates.

Contracts negotiated for fiscal year 1966 include institutions in 49 States, the District of Columbia, and Puerto Rico. These contracts provide for 640 conferences with public officials, as well as 146 classes for shelter management instructors, 212 for radiological monitoring instructors, 120 for radiological defense officers, 110 for radiological monitors, and 548 for shelter managers. In addition, the contracts provide for 205 classes in which the *Civil Defense Management* course will be taught.

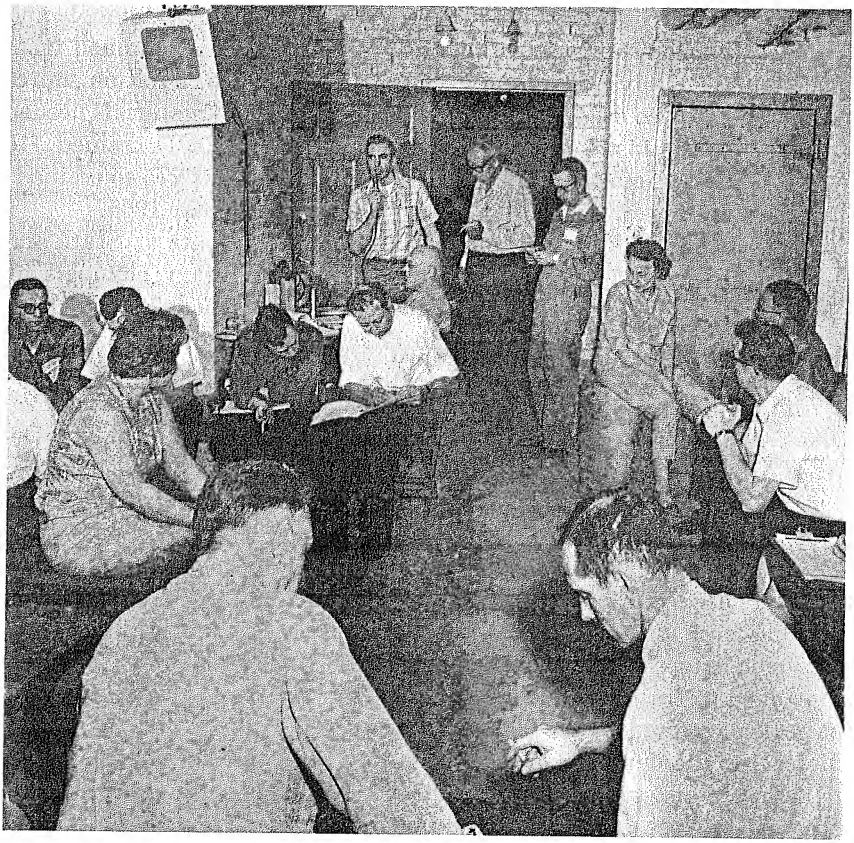


Figure 14.—Training of shelter management instructors in progress.

Many benefits to civil defense were derived from the CDUEP in addition to work performed in accordance with contracts. As a result of interest in the program, contract personnel served their State organizations in Arkansas and Minnesota during natural disasters. In many instances they served on State civil defense coordinating committees and made civil defense presentations before service organizations, school assemblies, and meetings of the parent-teachers' associations.

Radiological monitor training by the Army.—Radiological monitors trained by the U.S. Continental Army Command (USCONARC) in fiscal year 1965 totaled 7,157, making a cumulative total of about 10,760 trained by CONARC since the inception of this contractual arrangement in April 1963. These monitors are trained to help staff fixed radiological monitoring stations and public fallout shelters.

Army instructors for this purpose are trained at OCD schools and use the radiation source sets under a U.S. Army license obtained from the Atomic Energy Commission. The OCD provides radiation source sets in addition to other radiological instruments and materials needed to carry on the instruction. During the year, the OCD trained 115 additional instructors for the Army, making a total of 275 so trained; 25 Army posts were active in this program in fiscal year 1965.

Requests for training radiological monitors originate at State and local levels and are directed into appropriate military channels by OCD regional offices. Training locations and schedules are later arranged by agreement between local civil defense officials and the Army post providing the training.

Radiological monitor training through the Adult Education Program.—The training of radiological monitors through the Civil Defense Adult Education Program (CDAEP) was started on January 1, 1965. (See *Public Education* in part V.) At the end of fiscal year 1965, 8,968 monitors had been trained under this program. This proved to be an effective means of providing training for radiological monitors needed in public fallout shelters and monitoring stations.

Explosive ordnance reconnaissance.—Under longstanding OCD arrangements, the U.S. Continental Army Command (USCONARC) continued to train local and State police in explosive ordnance reconnaissance; more than 8,000 were trained during fiscal year 1965, increasing the cumulative total to more than 35,000. More than 800 police were also trained in techniques for dealing with explosive and sabotage devices, extending the number so trained to more than 8,000.

Public Education

The OCD public education activities are designed to make effective use of educational resources for civil defense and to provide individuals with facts and recommended actions for personal, family, and community survival. In fiscal year 1965, courses offered through the Civil Defense Adult Education and Medical Self-Help Programs were the principal public education activities. In addition, work in cooperation with national education organizations helped to gain the participation of public school systems in the civil defense program.

National education organizations.—Work with these organizations continued to bring use of the Nation's educational resources into the civil defense program. OCD staff, participating in annual conventions of the following organizations, explained how this process can be accelerated and improved in effectiveness: the National Education Association (NEA), the American Association of School Administrators (AASA), the Association of Higher Education, the National Catholic Education Association, the Adult Education

Association, and the National School Boards Association (NSBA). At five of these conventions, an OCD exhibit was used to highlight design features that increase fallout protection in school buildings.

Under contractual arrangements with the OCD, the National Commission on Safety Education, NEA, started a survey to produce definitive data on the extent of public school participation in civil defense. The survey is designed to show the amount of fallout shelter space available in schools as well as the nature of training given pertaining to its use. The types of warning system used by schools and the civil defense concepts incorporated in the curricula are also covered by the survey.

Educators' requests for OCD guidance on civil defense and disaster preparedness continued at a high rate. Many of these requests were made as a result of two publications prepared in cooperation with the NEA in fiscal year 1964: *You and Civil Defense* and *Schools and Civil Defense.*

A new booklet *School Boards Plan for Civil Defense*, prepared during fiscal year 1965 in cooperation with the NSBA, explains the school board member's role in community civil defense and provides guidance for school participation in civil defense. During the year, the AASA started a revision of the *Disaster Preparedness Handbook for School Administrators* which is designed to complement this booklet.

Civil Defense Adult Education Program (CDAEP).—During fiscal year 1965, 270,260 adults satisfactorily completed the 12-hour *Personal and Family Survial* course, and 6,758 teachers were trained and certified to teach it. This brought the total number of graduates, including teachers, to more than 1.1 million. The course was offered in 45 States, as well as in the District of Columbia and Puerto Rico. In January 1965, when a course in radiological monitoring (see *Professional and Technical Training* in part V) was made available through the CDAEP, 40 of these States added it to their programs.

The CDAEP is a means by which States can make civil defense instruction an integral part of their educational systems. Operated through regular adult education channels and contractual arrangements with the U.S. Office of Education, the program provides civil defense instruction without expense to local students. Participating States are granted Federal funds to coordinate the program and train local teachers. State personnel assigned to the program are trained at the OCD Staff College; two seminars for this purpose were held in fiscal year 1965.

Work on adapting the *Personal and Family Survival* course for television presentation was continued at Louisiana State University and Agricultural and Mechanical College in accordance with con-

tractual arrangements. Provisions for testing and evaluating the product were extended into fiscal year 1966.

Medical Self-Help Program.—Approximately 832,000 persons were trained in this program during fiscal year 1965, making a total of approximately 2.5 million trained since this nationwide program was started in fiscal year 1963. Developed for the OCD by the U.S. Public Health Service in cooperation with the American Medical Association, this program is designed to train individuals to meet civil defense emergency health needs in the absence of professional medical services.

Medical self-help training is adapted for classroom instruction as well as for television and other less formal methods. Many business and military organizations have made the training available to their personnel, and many high schools have incorporated it into the curriculum. The instruction has been standardized to some extent by a series of 11 training films, 1 for each lesson. The Communicable Disease Center of the U.S. Public Health Service, under contract, in consonance with an OCD work order agreement, has prepared 1,200 sets of these films.

Rural Civil Defense

A special civil defense information and education program for rural areas was continued in fiscal year 1965. This work, conducted under OCD contractual arrangements with the Field Extension Service of the U.S. Department of Agriculture, was carried on by approximately 11,000 extension agents at the county level and by about 3,200 agriculture specialists at the State level. Funds furnished under the contract enabled each State to have a full-time rural civil defense leader and resulted in the USDA's providing a small supervisory and field liaison staff at the Federal level.

As the result of civil defense training and briefings given to approximately 15,000 State and county USDA field Extension Service personnel in fiscal year 1964, the program gained momentum in fiscal year 1965.

More than 15,000 rural leaders attended civil defense training sessions and nearly 20,000 attended meetings on fallout shelter protection. Working through Home Demonstration Clubs, 4–H Clubs, and other organizations, these leaders informed nearly 890,000 persons about rural civil defense. In addition, copies of more than 2.6 million publications, more than 10,000 television and radio programs, and nearly 4,000 exhibits featured the application of civil defense to rural areas.

The rural civil defense information and education program extends to an audience of approximately 67.3 million persons, including those

in cities of less than 10,000 population. This program primarily explains how fallout protection can be provided on farms and in small communities, since most public fallout shelters are located in large cities. Special attention is given to the protection of livestock and feed, water, and food products. For example, State agricultural engineers provide guidance to county agents and others in evaluating the fallout protection afforded by farm buildings and make recommendations for improving this protection. In eight States, during fiscal year 1965, these engineers also worked on developing prototype procedures for providing technical assistance to local leaders in developing community fallout shelters.

Training Support Activities

In addition to developing and producing educational material to support OCD training and education activities, the OCD continued to determine precise training needs as well as to seek more effective training techniques by evaluating courses and methods already in use.

Materials.—These materials are primarily used in the Civil Defense Adult Education and University Extension Programs as well as by State and local governments in conducting standard civil defense training supported by Federal matching funds. Included are instructor guides, student manuals, and visual aids needed to train civil defense workers in special skills.

During fiscal year 1965, contractual arrangements with the U.S. Army Pictorial Center resulted in completion of six training films in support of instruction in civil defense management, shelter management, radiological monitoring, and individual and family survival. Work on 21 additional training films continued.

In cooperation with the American National Red Cross and the Department of Health, Education, and Welfare, an instructor guide on emergency mass feeding was revised and work was continued on revising a related student manual. Working under OCD contract, universities completed sets of training materials for civil defense workers, including those for auxiliary police and instructors. Work on similar training sets for auxiliary firemen as well as for professional orientation in programed instruction (self-teaching techniques) continued. In addition, the OCD staff produced an 8-hour course in damage assessment for nationwide use.

Requirements, status, and evaluation.—Through various contractual arrangements with the Federal Electric Corporation, the OCD developed the training standards needed for 11 civil defense positions at the State level and 13 at the local level. These standards were tested individually and some older standards were revised. They are now available to civil defense employees, including new appointees, for syste-

matic use in improving their job performance. Also, five basic courses taught at OCD schools were evaluated, and a guide for training shelter staff was completed.

To improve operational performance of teams or small groups on local civil defense staffs, an OCD contract with Basic Systems, Inc., resulted in completion of performance standards for several units for whose members training standards had previously been developed. A study report, prepared for the OCD by Dunlap and Associates, suggested means for exchanging training information between civil defense organizations as well as for evaluating OCD training films. The extent to which civil defense training can be integrated into existing local training activities, and the best methods for doing this will be determined as the result of data being developed in accordance with contractual arrangements.

With assistance from the Stanford Research Institute, the OCD also developed an emergency operating center training exercise. (See *Professional and Technical Training* in part V.)

FINANCIAL ASSISTANCE

Throughout fiscal year 1965, the OCD continued to provide Federal matching funds to States, territories, and possessions in accordance with the *Federal Civil Defense Act of 1950*, as amended. Recipients of these funds submitted program papers and reports showing specific objectives, activities, and accomplishments of State or local civil defense operations.

OCD Federal financial and certain other assistance is subject to the *Civil Rights Act of 1964*. In April 1965, the OCD issued a regulation implementing for its financial assistance the requirements of the presidentially approved Department of Defense regulation. A publication *Nondiscrimination in the Civil Defense Program*, MP–29, and other guidance material were developed and issued to State and local governments and to the public. Under the Department regulation, each State must furnish a *Statement of Compliance with Methods of Administration* and each subdivision receiving assistance, an *Assurance of Compliance*. These are conditions for the receipt of further financial assistance. The OCD requested these assurances about June 1, and by June 30 had received 46 statements of compliance from States and 1,828 assurances from political subdivisions.

Approximately $10.1 million was obligated during fiscal year 1965 for civil defense supplies, equipment, training, and emergency operating centers. (See table 6.) Nearly $5.8 million of this total was for emergency operating centers. Other obligations were mainly for communications and warning equipment and for training activities.

TABLE 6.—*Fiscal year 1965 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers*

Area	Amounts obligated		
	Total	Supplies, equipment, and training	Emergency operating centers
Total	$10, 108, 881	$4, 347, 523	$5, 761, 358
REGION ONE	2, 257, 270	1, 152, 962	1, 104, 308
Connecticut	35, 087	32, 868	2, 219
Maine	189, 965	87, 401	102, 564
Massachusetts	154, 620	105, 449	49, 171
New Hampshire	52, 158	36, 627	15, 531
New Jersey	98, 635	86, 360	12, 275
New York	1, 632, 205	716, 750	915, 455
Rhode Island	37, 438	30, 520	6, 918
Vermont	41, 781	41, 781	0
Puerto Rico	15, 381	15, 206	175
Virgin Islands	0	0	0
REGION TWO	705, 896	354, 899	350, 997
Delaware	28, 253	13, 488	14, 765
District of Columbia	10, 564	4, 966	5, 598
Kentucky	85, 435	42, 469	42, 966
Maryland	207, 672	82, 750	124, 922
Ohio	54, 025	50, 877	3, 148
Pennsylvania	275, 913	140, 509	135, 404
Virginia	36, 168	14, 974	21, 194
West Virginia	7, 866	4, 866	3, 000
REGION THREE	994, 166	234, 011	760, 155
Alabama	82, 053	31, 472	50, 581
Florida	189, 477	47, 754	141, 723
Georgia	265, 006	52, 806	212, 200
Mississippi	50, 917	25, 045	25, 872
North Carolina	356, 396	41, 065	315, 331
South Carolina	28, 151	16, 985	11, 166
Tennessee	22, 166	18, 884	3, 282
Canal Zone	0	0	0
REGION FOUR	879, 084	451, 222	427, 862
Illinois	161, 523	86, 286	75, 237
Indiana	4, 963	4, 963	0
Michigan	256, 187	120, 092	136, 095
Minnesota	169, 319	80, 414	88, 905
Wisconsin	287, 092	159, 467	127, 625
REGION FIVE	708, 367	270, 115	438, 252
Arkansas	161, 580	94, 657	66, 923
Louisiana	57, 024	51, 274	5, 750
New Mexico	1, 568	1, 568	0
Oklahoma	90, 138	37, 087	53, 051
Texas	398, 057	85, 529	312, 528

TABLE 6.—*Fiscal year 1965 Federal contributions to State and local governments for supplies, equipment, training, and emergency operating centers*—Continued

Area	Amounts obligated		
	Total	Supplies, equipment, and training	Emergency operating centers
REGION SIX	$1,242,732	$431,622	$811,110
Colorado	41,022	38,565	2,457
Iowa	232,244	54,964	177,280
Kansas	64,785	63,456	1,329
Missouri	483,536	121,404	362,132
Nebraska	89,708	80,416	9,292
North Dakota	29,292	26,483	2,809
South Dakota	180,877	38,490	142,387
Wyoming	121,268	7,844	113,424
REGION SEVEN	2,995,972	1,310,530	1,685,442
Arizona	60,632	31,390	29,242
California	2,593,667	952,054	1,641,613
Hawaii	93,717	91,905	1,812
Nevada	217,763	216,263	1,500
Utah	29,200	18,918	10,282
American Samoa	0	0	0
Guam	993	0	993
REGION EIGHT	325,394	142,162	183,232
Alaska	41,708	6,166	35,542
Idaho	114,139	82,735	31,404
Montana	31,893	2,350	29,543
Oregon	40,118	10,349	29,769
Washington	97,536	40,562	56,974

To help State and local governments pay essential personnel and administrative expenses, the OCD made available approximately $15.5 million. All States, the District of Columbia, Puerto Rico, American Samoa, the Virgin Islands, and 1,498 of their political subdivisions participated in this program in fiscal year 1965. (See table 7.) State and local employment supported by these funds is required to be under a merit system satisfying Federal standards. The number of participating political subdivisions in fiscal year 1965 was about 8 percent greater than that of the preceding year. The number of State and local employees performing civil defense functions totaled 5,436, an increase of nearly 1.7 percent since the end of fiscal year 1964.

The program for partial reimbursement of travel and per diem expenses of students attending OCD schools continued to encourage training of State and local civil defense personnel. Course completion certificates issued to students reimbursed under this program during fiscal year 1965 totaled 1,102, and the amount reimbursed was $62,087.

TABLE 7.—*Fiscal year 1965 Federal contributions for State and local civil defense personnel and administrative expenses*

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
Total	$15, 471, 863	1, 498	5, 436
REGION ONE	4, 370, 646	177	1, 380
Connecticut	177, 728	12	59
Maine	210, 087	30	85
Massachusetts	513, 100	32	165
New Hampshire	51, 620	4	21
New Jersey	417, 400	39	162
New York	2, 674, 700	31	744
Rhode Island	114, 000	7	38
Vermont	45, 011	3	14
Puerto Rico	157, 400	19	58
Virgin Islands	9, 600	0	4
REGION TWO	1, 685, 865	156	667
Delaware	80, 000	4	31
District of Columbia	100, 300	0	26
Kentucky	171, 050	31	85
Maryland	353, 637	19	112
Ohio	251, 548	17	100
Pennsylvania	500, 000	51	209
Virginia	141, 671	17	61
West Virginia	87, 659	17	45
REGION THREE	2, 227, 356	317	929
Alabama	356, 200	52	140
Florida	478, 673	46	172
Georgia	458, 100	87	201
Mississippi	148, 700	30	89
North Carolina	384, 000	48	144
South Carolina	231, 100	33	103
Tennessee	170, 583	21	80
Canal Zone	0	0	0
REGION FOUR	1, 830, 577	295	676
Illinois	406, 454	55	146
Indiana	124, 832	19	49
Michigan	423, 108	61	130
Minnesota	441, 306	96	188
Wisconsin	434, 877	64	163
REGION FIVE	1, 002, 899	108	387
Arkansas	173, 500	25	72
Louisiana	277, 437	11	103
New Mexico	74, 721	7	21
Oklahoma	177, 156	25	72
Texas	300, 085	40	119

TABLE 7.—*Fiscal year 1965 Federal contributions for State and local civil defense personnel and administrative expenses*—Continued

Area	Amount obligated	Political subdivisions	
		Number participating	Staff
REGION SIX	$1, 022, 286	249	500
Colorado	144, 649	25	61
Iowa	137, 938	26	62
Kansas	133, 525	51	81
Missouri	206, 000	39	91
Nebraska	144, 000	25	68
North Dakota	120, 500	43	59
South Dakota	82, 900	24	45
Wyoming	52, 774	16	33
REGION SEVEN	2, 747, 974	113	672
Arizona	158, 947	15	62
California	2, 214, 000	78	493
Hawaii	165, 313	4	40
Nevada	112, 285	9	41
Utah	76, 600	7	27
American Samoa	3, 432	0	3
Guam	17, 397	0	6
REGION EIGHT	584, 260	83	223
Alaska	108, 991	5	26
Idaho	80, 000	29	57
Montana	84, 500	23	37
Oregon	35, 293	10	17
Washington	275, 476	16	86

Cumulative expenditures since this program was started in fiscal year 1960 totaled $613,161; completion certificates issued totaled 10,347.

SURPLUS PROPERTY

As authorized by Public Law 655, 84th Congress, the donation of Federal surplus property for use in any State for civil defense purposes was continued. Since the program was started in fiscal year 1957, property having an acquisition cost of approximately $309 million has been transferred to the States. Federal surplus property valued at more than $36 million was donated to the States in fiscal year 1965. (See table 8.) Recipients of surplus property donations during fiscal year 1965 submitted the same type of program papers and reports as those required of recipients of Federal matching funds.

TABLE 8.—*Federal surplus property transferred to State and local governments for civil defense purposes*

[In thousands of dollars]

Area	Acquisition cost of transferred property [1]	
	Fiscal years 1957 through 1965	Fiscal year 1965
Total	$308, 671	$36, 186
REGION ONE	53, 355	6, 427
Connecticut	5, 803	457
Maine	7, 165	969
Massachusetts	14, 227	2, 239
New Hampshire	2, 457	361
New Jersey	8, 968	1, 181
New York	9, 276	755
Rhode Island	2, 372	253
Vermont	905	60
Puerto Rico	2, 182	152
Virgin Islands	0	0
REGION TWO	27, 870	2, 534
Delaware	445	107
District of Columbia	0	0
Kentucky	3, 371	506
Maryland	5, 491	564
Ohio	3, 997	372
Pennsylvania	8, 285	508
Virginia	4, 642	219
West Virginia	1, 639	258
REGION THREE	66, 068	8, 686
Alabama	10, 463	1, 369
Florida	16, 708	1, 202
Georgia	14, 582	1, 672
Mississippi	7, 860	1, 758
North Carolina	9, 796	1, 749
South Carolina	3, 211	305
Tennessee	3, 448	631
Canal Zone	0	0
REGION FOUR	36, 393	3, 259
Illinois	9, 404	1, 259
Indiana	5, 077	180
Michigan	15, 476	1, 529
Minnesota	3, 988	179
Wisconsin	2, 448	113
REGION FIVE	38, 070	4, 787
Arkansas	6, 310	544
Louisiana	9, 211	1, 031
New Mexico	1, 075	57
Oklahoma	5, 015	955
Texas	16, 459	2, 200

See footnote at end of table.

TABLE 8.—*Federal surplus property transferred to State and local governments for civil defense purposes*—Continued

[In thousands of dollars]

Area	Acquisition cost of transferred property [1]	
	Fiscal years 1957 through 1965	Fiscal year 1965
REGION SIX	$20, 492	$2, 332
Colorado	4, 145	444
Iowa	1, 571	420
Kansas	1, 595	123
Missouri	4, 951	503
Nebraska	1, 561	97
North Dakota	1, 906	163
South Dakota	2, 685	265
Wyoming	2, 077	316
REGION SEVEN	53, 440	6, 982
Arizona	2, 211	390
California	43, 849	5, 436
Hawaii	487	71
Nevada	1, 667	317
Utah	5, 226	768
REGION EIGHT	12, 983	1, 179
Alaska	1, 434	178
Idaho	2, 315	124
Montana	752	102
Oregon	2, 575	200
Washington	5, 907	575

[1] Figures may not add to exact totals due to rounding.

EMERGENCY SUPPLIES AND EQUIPMENT INVENTORY

Supplies and equipment maintained by the OCD for emergency use include forty-five 10-mile units of engineering equipment available for local use to pump water during natural disasters and postattack operations. During fiscal year 1965, this equipment was loaned to 13 States for use in 39 communities to help overcome water shortages or combat flood conditions.

At the end of fiscal year 1965, this inventory was valued at approximately $7.6 million. The value of the inventory was reduced by about $2.4 million during the year, mainly as the result of removing items determined to be obsolete or excess to OCD requirements.

In accordance with Executive Order 10958, effective August 14, 1961, procurement and management of medical supply inventories for civil defense use are responsibilities of the Department of Health, Education, and Welfare.

RESEARCH

OCD research is directed to the study of a wide range of problems requiring solution for continued development of a sound national civil defense program. It provides information useful in making basic decisions in planning and conducting the civil defense program. It helps to improve the effectiveness of operational systems and to develop more economical and effective hardware and procedures for them.

By carefully selecting the studies to be made and by continuing the most promising research already underway, OCD research continued to yield substantial results throughout fiscal year 1965.

Nearly all of the research studies in the OCD research program are performed by research groups—government and private—working under contract. Selection of contractors to perform this work is based on demonstrated capability, technical competence, and productivity. The percentage of funds committed to various research groups during fiscal year 1965 and the 3 preceding years was:

	Percent	
	Fiscal years 1962–64	*Fiscal year 1965*
Department of Defense (DOD)	17. 5	27. 4
Federal agencies exclusive of DOD	17. 7	7. 6
Educational institutions	8. 4	7. 8
Private organizations, including industrial laboratories, research institutes and foundations, and quasi-government agencies	56. 4	57. 2
Total	100. 0	100. 0

Duplication of work has been avoided by closely coordinating OCD research projects with those conducted by other Federal agencies. This has frequently led to a joint effort on projects of mutual interest; e.g., some of the fire research efforts were jointly supported by the National Science Foundation, the Forest Service of the Department of Agriculture, the Bureau of Standards of the Department of Commerce, the Defense Atomic Support Agency, and the Advanced Research Projects Agency of the Department of Defense.

Functional categories.—During fiscal year 1965, the OCD directed research in four major categories. In addition, technical advisory

services were obtained under contract from lead laboratories to aid in managing selected areas of research. The percentage of funds programed for these research categories and services was:

	Percent
Shelter	29.0
Support systems	23.4
Postattack	19.2
Systems evaluation	24.2
Management and support services	4.2
Total	100.0

Table 9 shows how the $10.8 million fund programed for research in fiscal year 1965 was distributed among the various research projects.

Perspective.—Research in each major category is designed to provide long-term technological perspective, as well as short-term improvements, to the civil defense program. In fiscal year 1965, a major continuing research effort was started to examine in great detail the effects of various hypothetic attacks and the effectiveness of various civil defense countermeasures in five selected urban localities in the United States. This research is designed to exploit fully the technological data available in each of the research categories. Not only will it improve the methods of analyzing attack effects and of civil defense planning, but it will also serve to define research requirements and priorities more precisely.

SHELTER

Improvements in shelter design and construction methods and management techniques are major subjects of shelter research. In this work, the objective is to improve the effectiveness and reliability of providing protection against weapons effects and to reduce the cost. High priority is given to studies of shelter leadership and control in emergencies as well as to studies of shelter environment, supplies, and equipment.

During fiscal year 1965, work on shelter ventilation was accelerated. Further research on the packaged ventilation kit developed in fiscal year 1964 resulted in substantially lowering its cost. (See fig. 15.) This makes it feasible to increase the capacity for shelterees in many basement protected areas found in the National Fallout Shelter Survey but limited in capacity by lack of sufficient ventilation. Analyses of shelter ventilation requirements yielded guidance on the use of these ventilation kits; improved operational planning will result.

TABLE 9.—*Research funds programed, committed, and obligated, fiscal year 1965 appropriations*

Type of research (category and project)	Programed	Committed	Obligated
Total	[1] $10, 847, 500	$10, 752, 468	$9, 463, 931
Shelter	3, 150, 000	3, 130, 731	2, 492, 759
Protection studies	1, 190, 000	1, 188, 018	997, 610
Shelter environment	700, 000	697, 732	675, 949
Subsistence and habitability	117, 000	116, 800	116, 800
Component development	227, 000	226, 622	181, 622
Shelter management	642, 000	633, 741	403, 741
Shelter systems	274, 000	267, 818	117, 037
Support systems	2, 537, 500	2, 525, 949	2, 163, 449
Monitoring systems	160, 000	160, 000	160, 000
Communications and warning	315, 000	314, 592	314, 592
Reduction of vulnerability	157, 000	149, 940	149, 940
Emergency medical research	265, 000	265, 000	265, 000
Fire effects and protection	1, 255, 500	1, 252, 100	889, 600
Emergency operations	385, 000	384, 317	384, 317
Postattack	2, 081, 000	2, 045, 861	1, 853, 105
Radiological phenomena and effects	555, 000	555, 000	555, 000
Radiological countermeasures	458, 000	455, 000	455, 000
Repair, reclamation of damage	403, 000	402, 696	395, 000
Postattack medical, health, and welfare	215, 000	215, 000	180, 000
Recovery and maintenance systems	450, 000	418, 165	268, 105
Systems evaluation	2, 629, 000	2, 599, 927	2, 504, 618
CD systems analysis	1, 225, 000	1, 224, 894	1, 224, 894
Strategic analysis	150, 000	149, 650	149, 650
Vulnerability and requirements	475, 000	475, 000	475, 000
Organization and training	200, 000	200, 000	200, 000
Planning support	74, 000	60, 000	60, 000
Intelligence systems analysis	100, 000	100, 000	100, 000
Social and psychological	405, 000	390, 383	295, 074
Management and support	450, 000	450, 000	450, 000

[1] Consists of $10,000,000 regular OCD research and development appropriation, $500,000 appropriated to OCD for research and development work on packaged ventilation kit, and $347,500 reimbursable order received from Defense Atomic Support Agency for fire research.

The organization and management of shelter operations under simulated emergency conditions was the subject of a series of several shelter occupancy tests with the number of shelterees varying from 15 to 300. According to these studies, a pretrained and predesignated shelter staff is necessary to provide consistently efficient shelter operation. This type of leadership produced better behavioral and operational standards than did untrained leadership developed by chance. The extent of formal organization needed varied in proportion to the

shelter size. Medium size shelters not only needed a management staff but also team organization for special tasks and activities. Methods for studying this type of organization is shelters for up to 10,000 persons were under development.

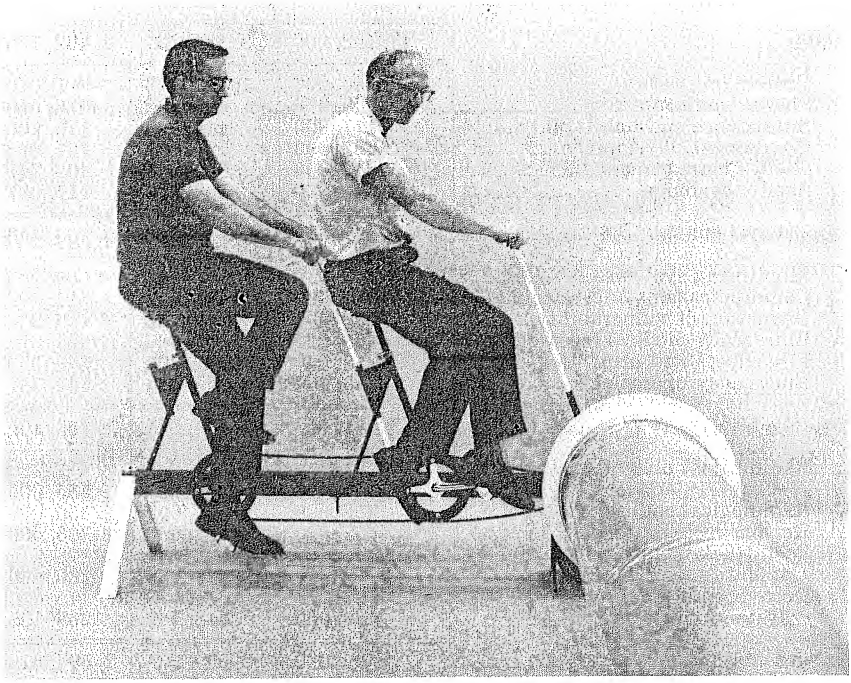


Figure 15.—Fallout shelter ventilation unit in operation. The unit contained in the packaged ventilation kit can be operated manually or electrically.

Special attention was given to theoretical and experimental study of how the penetration of radiation through walls and floors affected the protection provided by basements of residences and small buildings. The information obtained supported the development of the OCD program to locate shelter in buildings where existing community shelters do not fill the need.

Guidance materials to be stored in shelters for use by the shelter staff—trained or untrained—in conducting in-shelter operations were also tested. Improved guidance will result. Community case studies were made of the process of selecting and recruiting shelter staff. These studies provided information to be used in publications to guide local officials in staffing the shelters.

More realistic methods of calculating the fallout protection factor of buildings were anticipated as a result of studies taking into account the

effects of ingress of radioactive particles. This information will provide guidance for improved planning of in-shelter operations to keep to a minimum the dose received by the occupants.

SUPPORT SYSTEMS

Problems critical to effective emergency operations in the period before, during, and immediately after an attack are major subjects for support systems research. Work in fiscal year 1965 concerned warning, communications, radiological monitoring, emergency operations functions, emergency operating centers, vulnerability reduction, firefighting, and emergency medical care.

Studies of warning systems included analyses of radio warning and of warning features common to the military and civil defense. This resulted in proposing the use of an economical radio warning system relying on a modification of AM transmission.

In radiological monitoring, research resulted in the development of an automatic monitoring system using remote reading instruments and a mechanized means of handling and displaying data in emergency operating centers.

Research in command and control problems was advanced by the development of simulated emergency operating center activities. This will permit improved training of operating center staffs.

An analysis of urban development showed that the vulnerability of the population can be reduced effectively by organized dispersal in the extension and growth of urban areas. Vulnerability studies showed that the number of casualties could be reduced by temporary use of low-grade shelter, should movement to shelter or relocation be necessary in the presence of radioactive fallout.

Mass fire phenomena were investigated by observation of series of instrumented large-scale test fires and by examining data on fire storms, including World War II fires. A system was developed for rapidly and conveniently predicting the ignition range of various fuels relative to variations in yield and altitude of nuclear bursts and in atmospheric and environmental conditions. Two experimentally-based methods were developed for local use to evaluate the comparative susceptibility of urban areas to conflagrations and to determine their limiting boundaries in the absence of firefighting capabilities. These results will permit improved operational planning.

The feasibility of using airborne infrared detection and mapping techniques in support of firefighting was demonstrated experimentally in wildland and suburban fires in California. For locating concealed fires in buildings and debris, an infrared instrument (see fig. 16) that

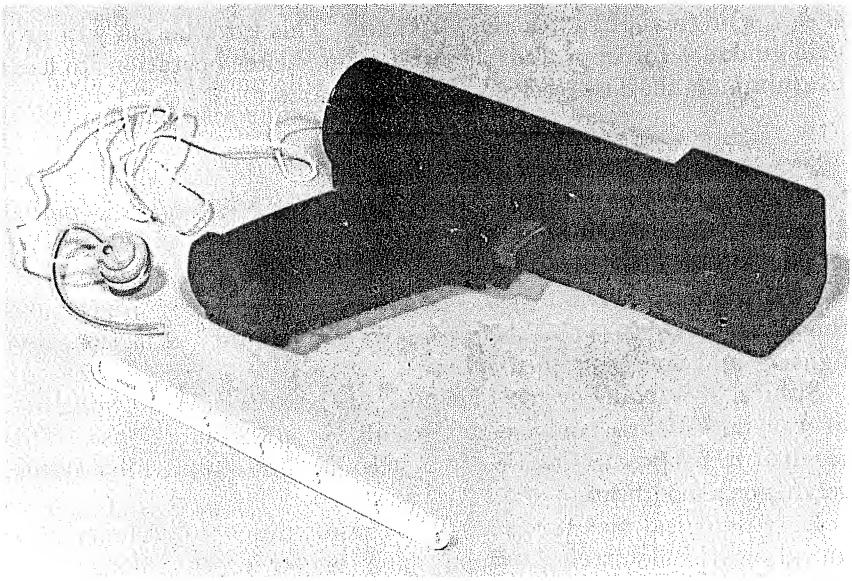


Figure 16.—Fire detection instrument.

can be held in the hand was developed and found to be reliable. Interim operational guidance on self-help in controlling individual fires was derived from study of firefighting techniques used in urban areas. These developments will lead to increased firefighting capabilities.

Studies in emergency medical research produced a review of the effects of thermal radiation on the eyes. A description of the emergency medical functions of dentists, veterinarians, and pharmacists was prepared. In addition, an experimental evaluation was made of the isotope uptake by people.

Based on broad studies of emergency operations, mathematical models were developed for computer use in determining operational constraints on organizational functioning and staffing patterns. These studies were supplemented by a series of analyses of disaster operations observed in the United States and abroad.

POSTATTACK

The major subjects for postattack research are the various measures for sustaining the surviving population and emergency restoration of vital facilities. Studies in fiscal year 1965 were focused especially on gaining a better understanding of radioactive fallout and its control by decontamination and other procedures. Techniques for restoring essential industrial facilities were studied, as were also the health

problems posed by postattack environment. Included in continued study were long-range ecological, social, and economic postattack problems.

Further improvements were made in the development of models for the study of radioactive fallout. A fallout model was developed to produce information specifically related to the cloud formed upon detonation of the nuclear weapon, and the resulting fallout distribution. Information derived from this model is applicable to study of immediate postattack problems as well as delayed effects of fallout on the environment.

Research data on repair techniques, and on other activities necessary for restoration of vital facilities, were produced. An exhaustive study of Hiroshima and Nagasaki World War II clinical records resulted in improved casualty estimates. These will be analyzed and evaluated for use in designing procedures for estimating health hazards and casualties. Sand-like fallout of volcanic origin from Mt. Irazu, Costa Rica—similar to fallout but not radioactive—was used in measuring the contamination of vegetation and of the ingress of fallout through open doors and windows. Operational problems of decontaminating extensive metropolitan areas were also studied, and improved guidance for operational planning resulted.

SYSTEMS EVALUATION

Systems evaluation produces information for determining policy decisions by analyses that take into consideration the cost and effectiveness of alternative civil defense countermeasures as well as their technical, social, political, and economic feasibility. The evaluation of possible civil defense alternatives, in a variety of possible future situations, continued to increase civil defense knowledge appreciably and provided guidance for program and policy decisions. Through continued comprehensive research, these evaluations will increase in reliability and value.

More effective techniques were developed in fiscal year 1965 for evaluating civil defense systems, local and nationwide. This improved the ability to conduct detailed local analyses that will yield more reliable estimates of feasibility, effectiveness, and cost of civil defense at all levels of government. It also improved the base for planning and evaluating civil defense development and operations in the light of various possible attack patterns and alternative countermeasures.

The capability of identifying possible roles of civil defense in future national strategy was improved by continued projection of future strategic situations. These were based upon understanding of developments in weaponry, strategic doctrine, and defensive and offensive

capabilities, and of the effect that strategic situations would have on civil defense during a crisis buildup.

The capability of assessing the vulnerability of human and material resources, as well as that of economic, political, and cultural systems under various attack conditions, has been improved by continued study. Consequently, the performance that would be required of civil defense is better understood.

New studies were started to define more precisely the constraints that alternative organization patterns for civil defense and their associated training requirements impose on the design of civil defense systems. Continued research has led to more advanced techniques for developing data and methods to predict public acceptance of civil defense and the constraints that public acceptance impose on the civil defense program.

Part VII

SUPPORTING ACTIVITIES

In the light of nationwide and worldwide developments, a realistic perspective of the civil defense program is important to industry and to national organizations as well as to the general public. Their support and understanding are prime requisites for making civil defense effective and efficient. Major supporting activities that help meet these needs are discussed in this part of the report.

PUBLIC INFORMATION

Plans and preparations to provide the public with essential civil defense information in times of emergency continued to have top priority during fiscal year 1965. Closely associated with this priority was that of preparing information addressed to the public on the peacetime civil defense program, describing its functions and accomplishments as well as future goals.

New developments.—Civil Defense 1965 was released in April 1965. In addition to summarizing the conclusions expressed by the Department of Defense on the role of civil defense in the Nation's strategic defense structure, this publication defines the direction and scope of the nationwide civil defense program. To provide civil defense directors and others directly responsible for the program with concise and authoritative information on current concepts and functions, the OCD plans to update this publication annually.

Distinguished Service Citations were awarded to cities or counties that have provided stocked fallout shelter space for their entire resident population. During fiscal year 1965, these citations were awarded to 20 communities in 13 States: 3 each in Connecticut, Kentucky, and Maine; 2 in Minnesota; and 1 each in Arkansas, California, Iowa, Mississippi, New Jersey, New Mexico, New York, North Carolina, and Tennessee.

Nine new motion pictures were released during fiscal year 1965. Four of these form a series: *Primer for Survival*, which is intended primarily for television but is also available for general use. Accompanied by a booklet to assist local civil defense directors in using it effectively, the series includes *A Fact of Life*, *Fallout*, *The Sword and the Shield*, and *Postattack World*.

Two new films, *The Protected School* and *Texas Has a Brand New School*, show the incorporation of new architectural and engineering designs to provide fallout protection in new construction at little or no increased cost and without sacrificing functional or esthetic qualities. *Though the Earth Be Moved* (see fig. 17) is a filmed documentary of the Alaskan earthquake of March 1964 and related recovery actions. Keyed primarily for use in industrial civil defense, the film *Mutual Aid—The "us" in Industry.*

Two kits, containing a new series of radio and television spot announcements, were released to more than 5,000 stations nationwide.

Figure 17.—A scene from the film *Though the Earth Be Moved.* The sudden collapse of the walls of a store building in Anchorage, Alaska, endangered the lives of volunteer rescue workers.

The first kit included six spot annoucements about the Emergency Broadcast System (EBS), as well as an identifying slide for television stations, to be used during EBS tests or announcements. The second kit, also accompanied by an all-purpose slide for television stations, included 12 spot announcements featuring civil defense; e.g., shelter signs, warning, fallout protection in schools, and natural disaster preparedness.

Continued progress.—The Army Pictorial Center reported that over a 6-month period, 11,744 requests were received for OCD motion pictures. The OCD film *About Fallout* rated sixth in the number of requests for showings among the 4,324 military and civilian films in the system.

Frequent requests for OCD films from foreign governments were received through the U.S. Information Agency or from the military attaché or civil defense officials of the interested government. The film *About Fallout* was translated into French and Danish by Canada and Denmark for use in those countries.

The Day That Made a Difference, an OCD motion picture released during fiscal year 1964, was given an honor award by the Educational Film Library Association at its 1965 American Film Festival.

A series of OCD information bulletins, primarily for State and local civil defense officials, was continued. The 20 bulletins issued during the year included current information on the role of civil defense, as defined by the Secretary of Defense and the Director of Civil Defense, and on shelter stocking operations and evaluations of local readiness for disaster.

Approximately 11,000 newspapers and periodicals were provided a newspicture page illustrating how slanting techniques can be used to incorporate fallout protection in designing new construction at little or no additional cost, and without affecting the appearance or efficiency of the building.

During fiscal year 1965, the OCD answered more than 2,200 letters from the public. Approximately 45 percent of them concerned public fallout shelters primarily and covered various other aspects of civil defense as well; 20 percent were requests from students for OCD publications; 8 percent were from teachers desiring civil defense information; and 27 percent covered a variety of subjects.

A series of information publications on community organizations and civil defense, started in fiscal year 1964, was continued and expanded. The series contains guidance and program materials for conducting meetings on civil defense subjects and to assist community organizations in developing support for civil defense. By the end of June 1965, more than 560,000 copies of the basic publication *Community and Family Service for Civil Defense*, H–11, had been re-

quested, necessitating a third printing. Three additional publications in this series were issued during the year. Volume 1 of *Meetings That Move*, H–11–1, was distributed to more than 185,000 community leaders as a guide for conducting seminars and workshops on timely civil defense topics. Volume 2 of *Meetings That Move*, H–11–2, distributed to more than 97,000 community leaders, included guidance for local civil defense publicity. A booklet *Community Involvement in Civil Defense*, H–11–A, was prepared for the OCD by the American National Red Cross. This publication was distributed to local civil defense directors and other community leaders to help them identify and plan for the full use of community resources in emergencies.

A campaign, closely allied with these publications, was started by the OCD in fiscal year 1965 to gain fuller use of community organization resources for civil defense. In areas where shelter data indicated the need, the cooperation of community organizations was enlisted to reduce their community's shelter deficit by having their buildings licensed, marked, and stocked as public fallout shelters, as well as by incorporating fallout shelter in their new construction. The campaign also included enlisting their help in providing manpower for stocking fallout shelters, in encouraging members to train in civil defense, and especially in encouraging members to volunteer for training as shelter operating staff.

As a public service, about 2,400 local radio stations continued the weekly civil defense series *Stars for Defense* program. The American Broadcasting Co. and the Columbia Broadcasting System regularly used the series *Entertainment U.S.A.* and *Startime U.S.A.* in an entertainment-information format.

OCD exhibits were widely used at conventions, fairs, and on a traveling basis from one community to another. New exhibits produced in fiscal year 1965 included four 24-foot table-top displays, distributed to local civil defense directors, and four roll-up exhibits, which were sent to State and OCD regional offices. OCD exhibits were shown at 700 locations during the year to a total audience estimated at 27 million.

In response to a request from the Director of the Chicago Museum of Science and Industry and a similar request from the California Museum of Science and Industry in Los Angeles, the OCD exhibit *Science for Survival* was reproduced and made available for display at these museums for a period of 1 year. At Chicago, this exhibit was opened to the public in December 1964; at Los Angeles, it was opened in March 1965. The original exhibit continued to be shown at the New York World's Fair, where the daily count of visitors indicated that it was viewed by an average of 4,500 persons weekly.

TECHNICAL LIAISON

Assurance that OCD policies, plans, programs, and executive actions are predicated on and consistent with sound technical and scientific concepts is provided primarily through technical liaison activities. In fiscal year 1965, this included guiding and monitoring civil defense activities of the National Academy of Sciences-National Research Council as well as liaison with other scientific and technical organizations. Consequently, their capabilities continued to be used with increasing effectiveness for civil defense purposes.

A high priority of technical liaison was the cognizance maintained in regard to research efforts to facilitate early civil defense application of important findings. This entailed interpretation of research results in the light of past experience as well as recommendations for the adaptation of OCD policies, plans, and programs to exploit the findings to greatest advantage. Complementary to this priority was the liaison maintained with OCD operational components for the purpose of analytically evaluating program activities. Recommendations based on these evaluations were equally important in providing scientific and technical perspective to civil defense.

INDUSTRIAL PARTICIPATION

Industrial participation activities are designed to furnish the managers of industrial and commercial enterprises with the information and guidance they need to make effective civil defense preparations in their facilities. These include preparations for the protection of life and property during civil defense emergencies; namely, (1) Protecting industrial personnel and facilities, (2) preserving production or service capabilities, and (3) cooperating with and assisting the local government or community in its civil defense efforts.

Major accomplishments in helping business and industry attain these objectives during fiscal year 1965 were achieved principally through OCD cooperation with Federal agencies and industry. This resulted in (1) developing and disseminating industrial civil defense information; (2) bringing civil defense guidance to industry by means of conferences, seminars, and training activities; and (3) expanding the nationwide fallout shelter system in industrial facilities.

Through OCD encouragement and assistance, Federal agencies developed and disseminated civil defense information and guidance materials adapted to the needs of those industries with which they regularly conduct business. Leadership and guidance, extended to 21 Federal agencies having facility preparedness responsibilities assigned to them by Executive orders, assured that publications and

In a similar manner, the OCD provided guidance materials to components of the Department of Defense, including the Departments of the Army, Navy, and Air Force.

Many business and industrial firms, with OCD encouragement, continued to publish civil defense information in their magazines and newspapers and to distribute guidance material on personal and family survival to their employees. Generally, the number of articles about civil defense in industrial periodicals increased with new developments in Federal, State, and local programs.

Information and guidance materials.—Approximately 350,000 copies of civil defense publications applicable to business and industry were distributed through Federal agencies, State and local civil defense offices, business and industrial firms, and national professional and trade associations. About 40 publications were made available for nationwide use in this manner. These included technical publications prepared by the OCD and others prepared by various Federal agencies as well as by business and industry.

One of the principal new civil defense publications distributed during fiscal year 1965 was *Civil Defense and Emergency Planning for the Petroleum and Gas Industries*, prepared by the National Petroleum Council (NPC) in cooperation with the OCD and at the request of the U.S. Department of the Interior. This publication presents sample survival plans for petroleum and gas companies and includes revisions of manuals previously prepared by the NPC on disaster preparedness planning and on security. Distribution of a total of 75,000 copies provided detailed civil defense guidance to key management officials of the oil and gas industries throughout the Nation.

Another publication *Civil Defense in the Minerals and Solid Fuels Industries*, prepared by the Office of Minerals and Solid Fuels, U.S. Department of the Interior, was sent to managers of mineral and solid fuel facilities and others who would be responsible for production of minerals and solid fuels following nuclear attack.

In addition to joining with the OCD in the preparation and distribution of industrial and defense publications, Federal agencies gave their employees 750,000 copies of civil defense publications on home preparedness.

A motion picture film *Mutual Aid–The "us" in Industry* was completed and distributed for use in industrial civil defense. By dramatizing the formation of an industrial mutual aid association and its disaster control operations, the film encourages and motivates industry to join with local governments in civil defense efforts. Other motion pictures, in preparation at the end of fiscal year 1965, included films on

industrial civil defense and its application to port facilities and to the electric power industry.

Approximately 3,000 reproductions of a table-top exhibit *Industrial Civil Defense* were produced and distributed by the OCD to business and industrial organizations. The responsibility of industrial leaders to provide fallout protection for employees and for the public in commercial and industrial facilities is the theme of the exhibit. Included in its four-color folding displays are panels that indicate the role of industry in surveying, licensing, marking, and stocking public fallout shelters and in organizing employees and training them in civil defense. Other panels provide information on obtaining guidance for improving substandard shelter space and on the importance of including dual-use shelter space in new construction.

Conferences, seminars, and training activities.—Approximately 8,500 business, professional, and civic leaders obtained industrial civil defense information and guidance through conferences and seminars. These were conducted by 21 State and local governments in 19 cities and by professional and civic organizations and educational institutions nationwide. The OCD frequently assisted the sponsors of these activities by providing suitable information and guidance materials and by participating directly, often giving keynote speeches.

Major national organizations that the OCD worked with in developing and disseminating civil defense information and guidance to industry included: U.S. Civil Defense Council, Chamber of Commerce of the United States, National Association of Manufacturers, American Society of Association Executives, Millers National Federation, American Iron and Steel Institute, Association of Land Grant Colleges and Universities, and American Society for Industrial Security.

More than 11,000 senior military officers and key civilian leaders, who attended national security seminars conducted by the Industrial College of the Armed Forces in 14 cities, obtained civil defense material provided by the OCD. Industrial civil defense guidance material was also included in courses conducted for government and industry executives by the U.S. Army Military Police School, Fort Gordon, Ga.

Shelter development.—Direct liaison with many business and industrial firms resulted in expanding and strengthening the nationwide fallout shelter system. Negotiations were conducted with more than 75 multiplant firms to encourage them to adopt corporate fallout shelter policies. These primarily involved the authorization of company divisions and subsidiaries to license facilities for use as public fallout shelters and to include dual-use shelters in new construction.

Public fallout shelter space for many additional thousands of persons has been licensed as a result of OCD liaison with industry. Many firms have also adopted the policy of including a dual-use shelters in new or modified construction.

The nationwide fallout shelter system was presented as the essential core of a balanced civil defense program in business and industry. All liaison activities with industry emphasized this theme, as did the information and guidance presented at conferences and seminars. During fiscal year 1965, major firms in practically all categories of industry cooperated with the OCD by participating in these activities.

LABOR SUPPORT

In response to OCD liaison with labor and trade unions, these organizations continued to accelerate their support of civil defense at all levels of Government. A major move during fiscal year 1965 was the preparation of three civil defense training courses. These were primarily designed to make the resources of the 13.5 million members of the American Federation of Labor and Congress of Industrial Organizations (AFL–CIO) and their families more available for civil defense operations.

These courses, available to AFL–CIO or independent unions, are for labor leadership groups: (1) *Labor's Supporting Role in National, State, and Local Civil Defense* is a 3-hour presentation adaptable for use in labor summer schools, colleges, and seminars; (2) *Labor and the Postal Worker in Civil Defense* is a 1¼-hour presentation specially adapted to needs of postal employees; and (3) *Labor's Supporting Role in State, County and Local Civil Defense* is a 1¼-hour presentation on ways of applying any skill or trade to civil defense. All the courses, approved by the AFL–CIO Departments of Education and Public Relations, describe the purpose and scope of the civil defense program and labor's role in it. At the end of fiscal year 1965, 2,100 labor representatives had registered to attend these courses during the first quarter of fiscal year 1966, and labor representatives from Canada and West Germany had also requested them.

Labor organizations furnished free manpower and technical skill to the civil defense effort nationwide. Some examples follow:

1. In many cities, the International Brotherhood of Teamsters moved shelter supplies from local warehouses to shelter sites without cost to the government. For example, a joint labor-management effort in Kentucky resulted in moving 100,000 pounds of supplies into shelters, an operation that would otherwise have cost an estimated $32,000. The Kentucky Transportation Association furnished the vehicles and

the International Brotherhood of Teamsters, Local 89, of Louisville, Ky., furnished the labor.

2. Local 89 of the International Brotherhood of Teamsters also joined with the Terminal Transport Co., of Atlanta, Ga., to move a 4-ton electric generator from Florida to Lexington, Ky. The generator was a Federal surplus property donation to be used for civil defense purposes.

3. AFL–CIO and unions affiliated with it provided manpower and equipment for combating flood disasters in California, Colorado, Idaho, Kansas, Nebraska, New Mexico, Minnesota, Oregon, and Washington.

The support of labor organizations extended to an interest in civil defense legislation. The AFL–CIO mailed an official publication *Labor Looks at the 88th Congress* to more than 85,000 of its key group leaders. This publication outlined the history of civil defense legislation and identified legislation for civil defense as a primary AFL–CIO objective.

Resolutions adopted by the AFL–CIO, State labor federations and trade unions, and international unions strongly supported civil defense. OCD representatives frequently addressed conventions of these organizations on the subjects of civil defense. In presenting civil defense information to the public, labor organizations cooperated nationwide, as illustrated by the following examples:

1. The AFL–CIO Newsletter, carrying two articles on civil defense, was mailed to 85,000 labor officials and reprinted in many of the 600 local and State publications.

2. At the AFL–CIO Union-Industry Show, Pittsburgh, Pa., OCD exhibits were shown to an audience of more than 253,000 people and 130,000 copies of civil defense educational material were distributed.

3. More than 288,000 civil defense pamphlets and booklets were distributed through labor organizations.

4. The International Labor Press Association of America, representing 432 international, national, State, and local labor papers, provided membership mailing lists to the OCD, whose representative participated in committee meetings of the association.

INTERNATIONAL ACTIVITIES

Exchange of information and mutual civil defense planning were the principal international activities of the OCD during fiscal year 1965. In coordination with the Department of State, these activities were conducted in cooperation with the North Atlantic Treaty Organization (NATO) and the Central Treaty Organization (CENTO), as well as by special arrangements with Canada.

The OCD participated in the October 1964 and May 1965 meetings of the NATO Civil Defense Committee as well as in NATO Working Parties on Shelters and on Scientific Problems. In addition, the OCD assisted the Department of State in the preparation of U.S. position papers for use at meetings of the NATO Senior Civil Emergency Planning Committee and related working parties.

Enroute to NATO meetings, OCD representatives visited selected European countries to study their civil defense techniques and programs. They also attended the opening of the National Radioactivity and Warning Information Center, Brussels, Belgium; a meeting of the Health Physics Instrumentation Working Group in Geneva, Switzerland, and a thermal symposium in England.

Several civil defense representatives from Canada, India, and the Republic of the Philippines attended OCD training courses. Professional architects and engineers attending *Fallout Shelter Analysis* courses included persons from Australia, Canada, England, Ghana, Iceland, India, Japan, Peru, and Turkey.

The United States/Canada Joint Civil Emergency Planning Committee (JCEPC) met in Washington, D.C., in April 1965. The Secretary of the Cabinet and the Director General of the Emergency Measures Organization represented Canada, and the Director of the Office of Emergency Planning and the Director of Civil Defense represented the United States. They agreed to establish a subordinate Joint Committee on Emergency Resources Planning and to make the warning signals of the two countries more compatible. To provide for direct communications between four Canadian and four U.S. regional offices, the JCEPC decided to install suitable circuits and teletype equipment. Joint exercises to test emergency plans were agreed upon as were also the continuation of joint studies and planning activities designed to improve the lifesaving potential of emergency operations involving both Nations. The United States has proposed a revision of the 1963 exchange of notes on emergency planning which would make peacetime disaster preparedness planning an activity of the JCEPC.

Both NATO and CENTO member nations were supplied with copies of OCD information bulletins and the OCD annual report for fiscal year 1964 as well as other publications. Technical and public information was provided in response to a total of 415 requests from 55 countries. In return, the OCD regularly receives 13 civil defense periodicals and other civil defense information from foreign countries.

Civil defense briefings were presented at Washington, D.C., and at OCD regional offices to visiting officials from Argentina, Australia, Austria, Canada, Denmark, Finland, France, Iceland, India, Japan, the Netherlands, Norway, West Germany, the Republic of the Philip-

pines, South Africa, Sweden, Switzerland, and England. Included among these were five national telecommunications officials from France.

THE AMERICAN NATIONAL RED CROSS

Governments at all levels continued to obtain assistance from the American National Red Cross (ANRC) in developing civil defense readiness. The ANRC's historic role in dealing with all types of disaster has uniquely qualified its staff to serve the civil defense effort in both advisory and operational capacities.

Throughout fiscal year 1965, the ANRC provided the services of an ANRC liaison representative to the Office of the Director of Civil Defense, and the OCD continued contractual arrangements that provided an ANRC advisor at each OCD regional office. In consonance with the memorandum of understanding of August 15, 1962, the ANRC cooperated by providing fallout shelter space in its buildings and by encouraging local chapters to assist similarly in the program.

In fiscal year 1965, the ANRC prepared a booklet containing suggestions to help local civil defense directors in identifying and securing the participation or use of community resources in civil defense. Also, the nationwide ANRC field chapters continued to help train people in first aid, home nursing, emergency mass feeding, and medical self-help, as well as to assist in community shelter training and management.

ADVISORY COMMITTEE ON SHELTERS

This section of the report and appendix 4 include the information on advisory committees required by section 10(a) of Executive Order 11007, February 27, 1962.

The Advisory Committee on the Design and Construction of Public Fallout Shelters (known as the Construction Industry Civil Defense Advisory Committee) was the only advisory committee that served the Office of Civil Defense during fiscal year 1965. Proceedings were started to give full membership status to the Consulting Engineers Council which previously has been represented on the committee through the Engineers Joint Council. The chairman is a full-time salaried official of the OCD, and the membership includes representatives from the American Institute of Architects, the American Institute of Planners, the American Society of Civil Engineers, the National Society of Professional Engineers, the Engineers Joint Council, and the Associated General Contractors of America, Inc.

The committee reviewed OCD programs and activities of interest to architects, engineers, planners, and contractors and suggested im-

provements. Highlights of committee recommendations and advice concerned: (1) A third OCD architectural design competition, (2) implementation of professional advisory services for architects and engineers, and (3) a high-level Department of Defense briefing on civil defense for personnel in the Offices of the Secretary of Defense and the Secretaries of the military services. Committee members used news media of their own organizations to disseminate information on the professional and faculty development programs in support of civil defense.

WILLIAM P. DURKEE
Director of Civil Defense

NUMBER 3025.10
DATED *March 29, 1965*

ASD(A)

DEPARTMENT OF DEFENSE DIRECTIVE

SUBJECT: Military Support of Civil Defense

References: (a) The Federal Civil Defense Act of 1950, as amended
(b) Executive Order 10952, "Assigning Civil Defense Responsibilities to the Secretary of Defense and Others," July 20, 1961
(c) DOD Directive 5160.50, "Civil Defense Functions," March 31, 1964

I. PURPOSE

This directive establishes Department of Defense policies, assigns responsibilities, and sets forth general guidance as to the requirement for military support of the national civil defense program and the basis for providing military support of civil defense under a national emergency involving a nuclear attack, or a condition which might precede a nuclear attack on the United States.

II. CANCELLATION

This directive supersedes DOD Directive 3025.10, subject: "Military Support of Civil Defense," April 23, 1963.

III. APPLICABILITY

This directive is applicable to all components of the Department of Defense having cognizance over military resources which may be employed in accordance with the policies and responsibilities set forth herein in support of civil defense in the 50 States, the District of Columbia and the territories and possessions of the United States.

IV. CONSIDERATIONS

A. The national civil defense program is an integral part of the national security posture and is an essential element of our deterrent posture. Effective civil defense programs contribute to the total military capability of U.S. forces. Effective survival/civil defense programs at military installations will provide visible

evidence to the public that these programs are essential to national security. It is essential, therefore, that military and civil planning for civil defense be closely coordinated to insure mutually supporting actions to achieve common objectives.

B. In the event of a nuclear attack on the United States the degree of military involvement in support of the civil defense mission during the attack and in the immediate postattack phase will depend upon the extent of damage suffered and the active military operations in progress or required. The preattack and postattack military roles in support of civil defense are based on the spectrum of contingencies which could result from an enemy attack on this Nation, including a nuclear attack, with minimum warning and under conditions favorable to the attacker.

C. Military forces will have a priority commitment, initially, to the mounting of offensive and defensive actions and to assist civil authorities in the assessing and reporting of damage and danger areas in the continental limits of the United States. It is possible that damage will be so extensive as to require evaluation as to the priorities to be assigned to the needs of civil support as opposed to military requirements for certain planned combat and combat-support operations.

V. GENERAL POLICIES

A. The DOD recognizes the essential interdependence of the civil and military defense efforts of our Nation in achieving the total posture of national security. Military support to civil authorities in civil defense operations is an emergency task within the mission of all Federal active duty and reserve units of the military services and Defense Agencies.

B. The Military Services and Defense Agencies will provide feasible support to local or State authorities during a war-created emergency consistent with the policies established below:

1. Planning for military support of civil defense will be directed toward the most disastrous contingency described in IV.B., above to include planning for attacks under both minimum warning and, when directed, for emergency preparations in crisis situations.

2. Measures to insure continuity of operations, troop survival and rehabilitation of essential military bases will take precedence over miltary support of civil defense.

3. Military assistance will complement and not be a substitute for civil participation in civil defense operations. Military

plans and plans developed by civil authority must recognize that civil resources will be the first resources used to support civil requirements with military resources being used only when essential to supplement the civil resources.

4. All military forces (active and reserve), other than those deployed outside the 50 States and those in the District of Columbia and the territories and possessions of the United States, will be considered potentially available to provide temporary emergency support to civil authorities during certain stages of civil defense operations. The availability of forces to provide this support will vary according to the military requirement for the conduct of essential combat, combat-support, or self-survival operations. Within the 48 contiguous States, each military department will provide the CONUS Army Commanders with periodic listings of all its military forces and components located within each CONUS Army area through appropriate headquarters designated by the parent service. The appropriate Commander of the Unified Command will provide for a similar listing of forces for Alaska, Hawaii, and Puerto Rico. This listing of forces will be in an order of priority of probable availability for support of civil defense operations as determined on the basis of the military missions of the forces reported, their location and their capabilities for performance of civil defense assistance tasks. Forces will be listed by priority as follows:

Priority I —Those forces that have a high probability of availability for civil defense support in the immediate emergency period.

Priority II —Those forces that have a lower probability of availability to support civil defense in a post-attack period.

Priority III—Those forces least likely to be available for civil defense support operations because of the high priority of their combat and combat-support missions.

5. Priorities of availability of forces will be reflected in appropriate plans for military support of civil defense. All forces listed in area civil defense assistance plans will be prepared and ready to execute the tasks contemplated in such plans. The degree of readiness to be maintained among such forces will be commensurate with the priority of their probable availability. Those military forces temporarily furnished to assist civil au-

thorities in a civil defense emergency will be withdrawn by the military commanders of the parent service, in coordination with the appropriate CONUS Army Commanders whenever practicable, or by the responsible Commander of the Unified Command in the event it is necessary to employ such forces in military operations, or when they are no longer required for civil defense missions.

6. A military commander, in making his resources available to civil authorities, is subject to no authority other than that of his superior in the military chain of command.

C. Military Role

1. *Mission.* In the event of a national emergency involving a nuclear attack on the United States, the Joint Chiefs of Staff, the Military Services, and Defense Agencies will be prepared to employ available resources which are not engaged in essential combat, combat-support, or self-survival operations to assist civil authorities to restore order and civil control, return essential facilities to operation, prevent unnecessary loss of life, alleviate suffering, and take other actions as directed to insure national survival and a capability on the part of the Nation to continue the conflict. In such employment established military organizational channels and prearranged plans will be followed when possible.

2. *Tasks.* In the discharge of the mission, the Secretaries of the Military Departments, the Joint Chiefs of Staff and the Directors of Defense Agencies, will take the necessary action to:

a. Provide for coordination and control, both preattack and postattack, of available military (active or reserve) capabilities and available resources. This task envisions:

(1) Establishment, under the Commanding General, U.S. Continental Army Command and the CONUS Army commanders, of State Military Headquarters to plan for, and conduct operations in support of civil defense, utilizing the State adjutants general and the State Headquarters and Headquarters Detachments of the 48 contiguous States.

(2) Establishment, under the Commanders of the Unified Commands for Alaska, Hawaii, and Puerto Rico, of a military headquarters to plan for, and conduct operations in support of civil defense utilizing the adjutants general and their headquarters.

(3) The designation and training of alternate headquarters in conformity with continuity of operations plans to

assume the responsibilities of the task in the event the principal headquarters is inoperative.

b. Train military forces in the basic functions of civil defense operations utilizing to the maximum possible extent present training facilities and courses in civil defense agencies.

c. Make provisions for commanders at appropriate echelons to provide immediate and independent support to local civil authorities; and under conditions where civilian control is no longer effective, to take necessary measures for the preservation of order and the protection of life and property.

d. Develop and maintain plans and capabilities as necessary to assist civilian authorities in times of an emergency in restoring Federal, State, and local civil operations. Such interim emergency assistance will be in coordination with and supplementary to the capabilities of State and local governments and other nonmilitary organizations and will be concerned with the following categories of assistance:

(1) Restoration of facilities and utilities, including transportation, communications, power, fuel, water, and other essential facilities.

(2) Emergency clearance of debris and rubble including explosive ordnance from streets, highways, rail centers, dock facilities, airports, shelters, and other areas, as necessary to permit rescue or movement of people, access to and recovery of critical resources, emergency repair or reconstruction of facilities, and other emergency operations.

(3) Fire protection.

(4) Rescue, evacuation, and emergency medical treatment or hospitalization of casualties, the recovery of critical medical supplies, and the safeguarding of public health. This may involve sorting and treating of casualties and preventive measures to control the incidence and spread of infectious diseases.

(5) Recovery, identification, registration, and disposition of deceased personnel.

(6) Radiation monitoring and decontamination to include identifying contaminated areas, and reporting information through the national warning system. Initial decontamination will, of necessity, be directed primarily at personnel and vital facilities.

(7) Movement control to include plans and procedures for essential movements.

(8) Maintenance of law and order to include:

(a) General police and law enforcement operations.

(b) Emergency highway traffic control and supervision.

(c) Security and protection of vital facilities and resources.

(d) Enforcement of economic stabilization measures, as may be required in the immediate postattack phase.

(9) Issue of food, essential supplies, and materiel to include collection, safeguarding, and issue of critical items in the initial postattack phase.

(10) Emergency provision of food and facilities for food preparation, should mass or community subsistence support be required.

(11) Damage assessment.

(12) Provision of interim communications utilizing available mobile military equipment to provide command and control.

VI. RESPONSIBILITIES

A. The Secretary of the Army (in the exercise of his responsibilities for civil defense) will:

1. Coordinate within the Department of Defense the policy and program aspects of military participation in civil defense preparedness activities and emergency operations, including civil defense test exercises.

2. Advise the Secretary of Defense on policies, responsibilities, and programs relating to military support of civil defense as a contingency mission of all military forces.

3. Provide current information and proposed courses of action to the Joint Chiefs of Staff, Service Secretaries, and Defense Agencies on civil defense matters in which they have a particular interest or responsibility, in order that realistic and effective preparations may be made for participation in civil defense operations.

4. Recommend measures for strengthening military/civil defense working relationships at the national level, consistent with the policies and principles set forth herein.

5. Submit recommendations to the Secretary of Defense, in coordination with the Joint Chiefs of Staff, regarding the pro-

posed use of military resources in key elements of the national civil defense program.

6. Provide guidance for military support of civil defense activities.

B. The Joint Chiefs of Staff will:

1. Provide recommendations to the Secretary of Defense on allocating active and reserve units for civil defense tasks, as enumerated in paragraph V.C.2.

2. Issue instructions to guide the military services in the allocation and assignment of military support of civil defense operations during all phases of an emergency.

3. Review and coordinate plans for military service participation in civil defense test exercises.

4. Issue instructions to Commanders of Unified Commands which will provide for the control of emergency military support operations within territories and possessions of the United States (Canal Zone, Puerto Rico, Virgin Islands, American Samoa, and Guam) lying within those commands, and for the States of Alaska and Hawaii. Such instructions will be in general conformity with the policies announced herein. The instructions will also provide for the establishment of liaison with local civil defense authorities.

5. Provide for the coordination of civil defense plans with military defense plans.

C. The Department of the Army will:

1. Take the necessary action to provide for the execution of the tasks enumerated in paragraph V.C.2., in accordance with approved guidance.

2. Identify all Department of the Army forces in each area on a priority of probable availability basis in accordance with paragraph V.B.4. Determine specific availability of forces after the attack.

3. Assure readiness of active and reserve elements of the Army to execute plans for emergency civil defense support operations.

4. Establish a State-level system wherein the State Adjutant General will be responsible for the preattack planning and emergency operations of such forces of all services as may be available within the State for civil defense support purposes.

5. As the department with the primary responsibility for military support of civil defense within the continental United States, insure effective utilization of resources made available

by the Department of the Navy, the Department of the Air Force, and Defense Agencies; establish joint measures for, coordinate, and control, through established service command channels, the employment of the active and reserve forces and resources made available by all military services in providing assistance to civil defense.

6. Coordinate military defense plans with civil defense plans and provide such military information, consistent with requirements for military security, as Federal, State, and local agencies may require in developing their plans.

7. Provide explosive ordnance disposal service, technical training, and planning assistance to civil authorities in the development and operation of the program.

D. The Department of the Navy will:

1. Take the necessary action to provide for the execution of tasks enumerated in paragraph V.C.2., in accordance with approved guidance.

2. Report to each of the CONUS Army Commanders all Department of the Navy forces in the Army area on a priority of probable availability basis in accordance with paragraph V.B.4.; determine specific availability of forces after the attack, and designate commands to assist in preattack planning and to provide for control of Department of the Navy forces made available for emergency support of civil defense operations.

3. Assure readiness of active and reserve elements of the Navy and Marine Corps to execute plans for emergency civil defense support operations.

4. Assist the Department of the Army in planning and providing civil defense support.

5. Furnish assistance to the Department of the Air Force, to the extent that conditions and resources available permit, in executing postattack aerial reconnaissance within the United States (excluding Alaska and Hawaii) for nuclear damage assessment purposes.

6. Maintain liaison and coordinate planning with the U.S. Coast Guard regarding the participation of Coast Guard forces in civil defense emergency operations.

7. Provide explosive ordnance disposal service underwater; for coastal areas to and including the high water mark; for enclosed bodies of water; for rivers or canals; at all Navy and

Marine Corps installations, and for disposal of explosive ordnance or nuclear materials aboard naval aircraft.

E. The Department of the Air Force will:

1. Take the necessary action to provide for the execution of the tasks enumerated in paragraph V.C.2., in accordance with approved guidance.

2. Report to each of the CONUS Army commanders all Department of the Air Force forces in the Army area on a priority of probable availability basis in accordance with paragraph V.B.4.; determine specific availability of forces after the attack, and designate commands to assist in preattack planning and to provide for control of Department of the Air Force forces made available for emergency support of civil defense operations.

3. Assure readiness of active and reserve elements of the Air Force to execute plans, for emergency civil defense support operations.

4. Assist the Department of the Army in planning and providing civil defense support.

5. Furnish appropriate assistance to units of the Civil Air Patrol engaged in emergency civil defense missions.

6. Conduct postattack aerial photo reconnaissance missions for damage assessment purposes. Information derived therefrom shall be made available to civil defense authorities as expeditiously as possible, in accordance with standing arrangements and procedures.

7. Provide explosive ordnance disposal service on Air Force installations and dispose of explosive ordnance or nuclear materials in the physical possession of the Air Force at the time of any incidents or accidents.

F. The Defense Agencies will, within their capabilities:

Provide advice and assistance as required on matters within their spheres of competence to the Secretary of the Army and to the Joint Chiefs of Staff in the discharge of the responsibilities enumerated in paragraphs VI. A. and B.; and provide advice and assistance and make available resources, not otherwise committed, to the Department of the Army in the discharge of the responsibilities enumerated in paragraph VI. C.

VII. FINANCING

Planning pursuant to this directive should assume that, in the event of a declared emergency situation, the President will invoke provi-

sions of title III, Federal Civil Defense Act of 1950, as amended, and the Secretary of Defense will be authorized to incur obligations and expropriate defense resources including material, equipment, facilities, etc., for civil defense purposes, without regard to existing laws.

VIII. IMPLEMENTATION

A. Outstanding departmental and JCS directives, instructions, and plans for military support for civil defense will be reviewed, and if not in agreement with this directive, will be changed within 60 days from the date of this directive. Implementing departmental directives and instructions will be revised to conform to JCS and DOD policies no later than 60 days following receipt of pertinent JCS directives.

B. Directives developed under assignment herein shall be furnished to the Secretary of the Army for review.

IX. EFFECTIVE DATE

This directive is effective immediately.

Cyrus Vance

CYRUS R. VANCE,
Deputy Secretary of Defense

Inclosure—1
Appendix A, "Concept of Military Support"

ENCLOSURE 1 TO DEPARTMENT OF DEFENSE DIRECTIVE 3025.1 (APPENDIX A) DATED MARCH 29, 1965

CONCEPT OF MILITARY SUPPORT

1. Modern warfare has created a condition wherein the entire resources of the Nation must be included in defense plans. Along with military defense and retaliatory forces, civil defense is a vital element of the Nation's total defense. Together, they not only stand as a strong deterrent to war, but constitute the greatest assurance of peace. A strong posture of civil defense is and will be a matter of increasing urgency.

a. A civil defense effort, balanced between the necessities of a fallout shelter program and other corollary and supporting programs, is required to meet the following needs:

(1) Providing credibility to Department of Defense programs of graduated response and selective targeting.

(2) Providing credibility for our deterrent posture. Without protection for the civil population, threats of retaliatory action may have less impact than if an effective civil defense program were in being.

b. During a deteriorating military situation, a civil defense program is essential to:

(1) Provide the American public with the assurance required to meet the situation without panic, in an orderly fashion.

(2) Demonstrate that the Nation's courses of action will not be in any way inhibited during a period of increasing tension.

(3) Help illustrate the "national will" to the aggressor so that the military action may be limited both in geography and in magnitude.

c. During and immediately following a nuclear attack, a balanced civil defense program will:

(1) Augment active defense in limiting loss of life and minimizing casualties resulting from the effects of the attack.

(2) Help to insure a surviving population which will be available to support postattack national objectives, including continued

2. Military assistance to civil authorities is a temporary measure. It will be terminated as soon as possible, in order to conserve military resources and to avoid infringement on the responsibility and authority of civil government agencies.

Appendix 2

DESCRIPTION OF PUBLIC FALLOUT SHELTER SUPPLIES

Food rations (see fig. 18).—Food rations, providing 10,000 calories and averaging 5 pounds in weight per shelteree, are austere but adequate for sedentary conditions and estimated duration of shelter occupancy. The food is packaged in hermetically sealed cans having a capacity of 2½ or 5 gallons. These containers and special formulation of the food products are expected to assure that the food will remain usable for as long as 15 years after storage.

The Armed Forces Food and Container Institute, now the Army Natick Laboratories, developed specifications for the food items. They are: (1) A survival biscuit—a baked wheat flour biscuit containing small amounts of corn and soy flour—developed by the National Biscuit Co. for the New York State Civil Defense Commission; (2) a survival cracker—a baked wheat-corn cracker containing more corn flour than the survival biscuit, but no soy flour—developed by the Midwest research Institute for the State of Nebraska; (3) a bulgur wafer—containing parboiled bulgur wheat that has been dried, puffed, and blended with several ingredients—developed by the U.S. Department of Agriculture; and (4) a carbohydrate supplement containing sucrose, glucose, and flavorings—adapted from a standard product in accordance with a military specification.

The physiological fuel value of each of the four dry food items is approximately 2,000 calories per pound. The basic ration of 10,000 calories per shelteree contains proper components of protein, carbohydrate, and fat. The protein content is low, since consumption of high-protein foods increases renal activity and would require consumption of water in excess of limited amounts expected to be available in shelters. In accordance with established nutritional requirements, the carbohydrate supplement is limited to one-third the weight of the total food ration. The ration contains sufficient salt to preserve body fluids, but vitamin fortification is not necessary, and deficiencies in calcium, phosphorus, or potassium would not be of serious consequence during the limited period of shelter occupancy.

Food rations do not provide for special nutritional requirements of infants, young children, pregnant women, or those who are aged or ill. Special foods required by them must be brought into the shelter by the individuals or families concerned.

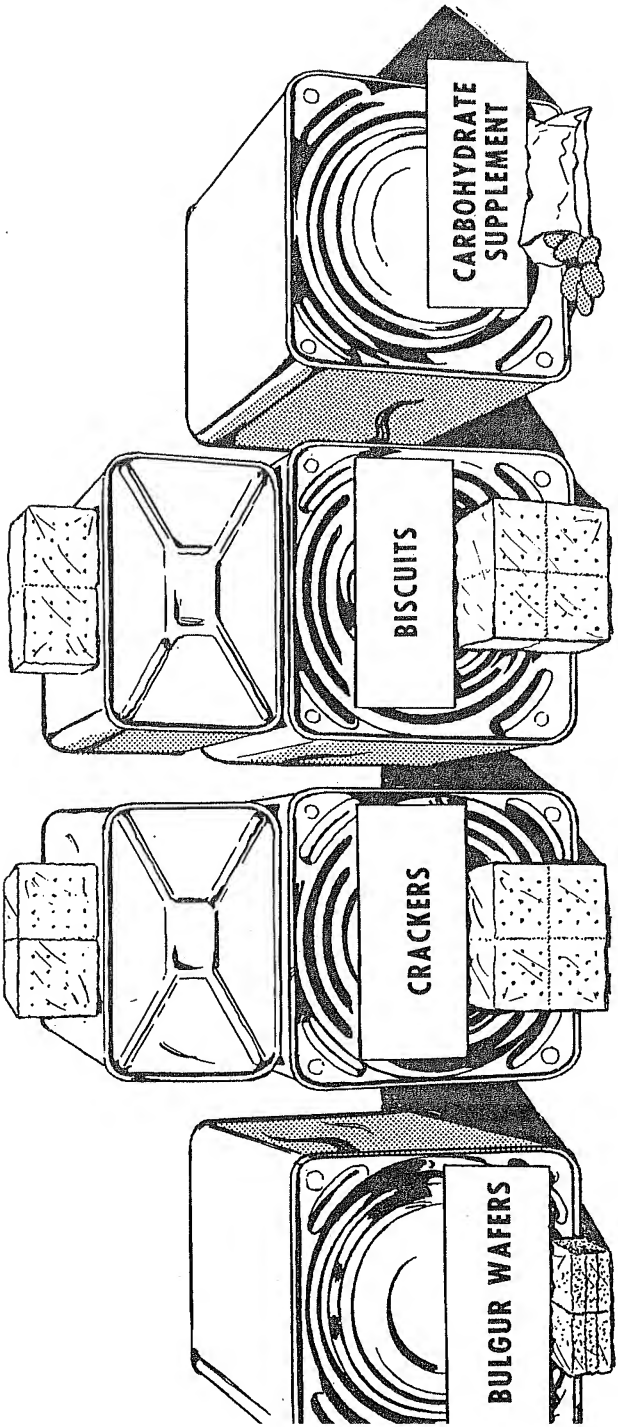


Figure 18.—Public fallout shelter food items.

Sanitation kits (see fig. 19).—Sanitation kits, designed for waste disposal during shelter occupancy are provided. Two kits are available: one with supplies to serve 25, and the other with supplies to serve 50 persons.

Each kit includes a 17½-gallon fiber drum packaged with toilet seat, toilet tissue, commode chemical, sanitary napkins, drinking cups for individual use, and other items. Packaged with each kit are instructions for its use. The toilet seat is designed to be used with the fiber drum as a chemical toilet, and as water containers are emptied, they can be used in the same manner. This method of waste disposal has been used satisfactorily in shelter occupancy tests conducted as part of OCD research projects.

Assembly of the kits is on the schedule of *Blind Made Products* under terms of the Wagner-O'Day Act of June 1938 (52 Stat. 1196; 41 U.S.C. 46–48). Workshops for the blind throughout the country therefore assemble the individual kit items. The National Industries for the Blind selects these workshops and competitively procures the kit components through centralized procedures that assure the ad-

Figure 19.—Public fallout shelter sanitation kit SK–4 (designed to serve 50 persons).

vantage of volume purchasing. Eleven workshops have performed the task of assembling sanitation kits.

Medical kits (see fig. 20).—Medical kits are provided in two sizes: one to serve 50–65 persons, the other to serve 300–325. These kits contain different quantities of identical items that provide an austere capability to save lives and alleviate suffering by (1) preventing disease and checking its transmission, (2) controlling emotional stress, and (3) controlling disease symptoms to alleviate pain and prevent complications. Medication and devices are not provided for chronic diseases, childbirth, or for purposes that require a high degree of professional proficiency.

Since health status, skills proficiency, and professional ability of shelter occupants can be estimated only generally, the kits are designed for nonprofessional use and contain nontechnical instruction booklets. The U.S. Public Health Service, Division of Health Mobilization, and DOD medical authorities have approved the items in the kit. Contents are adequate to serve emergency needs generally of normal, healthy persons. Persons having special health problems will need to make provisions for them prior to entering a shelter.

Radiation kit (see fig. 21).—At least one radiation kit, to be used by trained radiological monitors, is supplied each public fallout shelter. The kit contains: (1) A low range beta-gamma discriminating survey meter (CD V–700), known as a Geiger counter, for monitoring personnel, food, and water; (2) a high range survey meter (CD V–715) or ion chamber for monitoring inside and outside the shelter; (3) two dosimeters (CD V–742) for measuring personnel exposure; and (4) a dosimeter charger (CD V–750) to reset and recharge the dosimeters.

Use of this equipment during shelter occupancy will enable the radiological monitor to (1) locate the shelter area offering greatest protection, (2) evaluate contamination of personnel and material brought into the shelter, (3) determine when adjoining areas are sufficiently free of radiation to be used for relieving overcrowding, (4) control radiation exposure of persons performing emergency functions, and (5) provide radiological data on the surrounding area to the shelter manager and the local emergency operations center.

Water containers (see fig. 22).—The containers are 17½-gallon, lightweight steel drums supplied with a double polyethylene liner. The drums are filled at the shelter site with water from sources meeting Public Health Service standards. One container is intended to serve five shelterees, and tests have shown that this method is suitable for long-range storage of potable water. During shelter occupancy, the empty water containers may be converted to chemical toilets by using appropriate items contained in the sanitation kits.

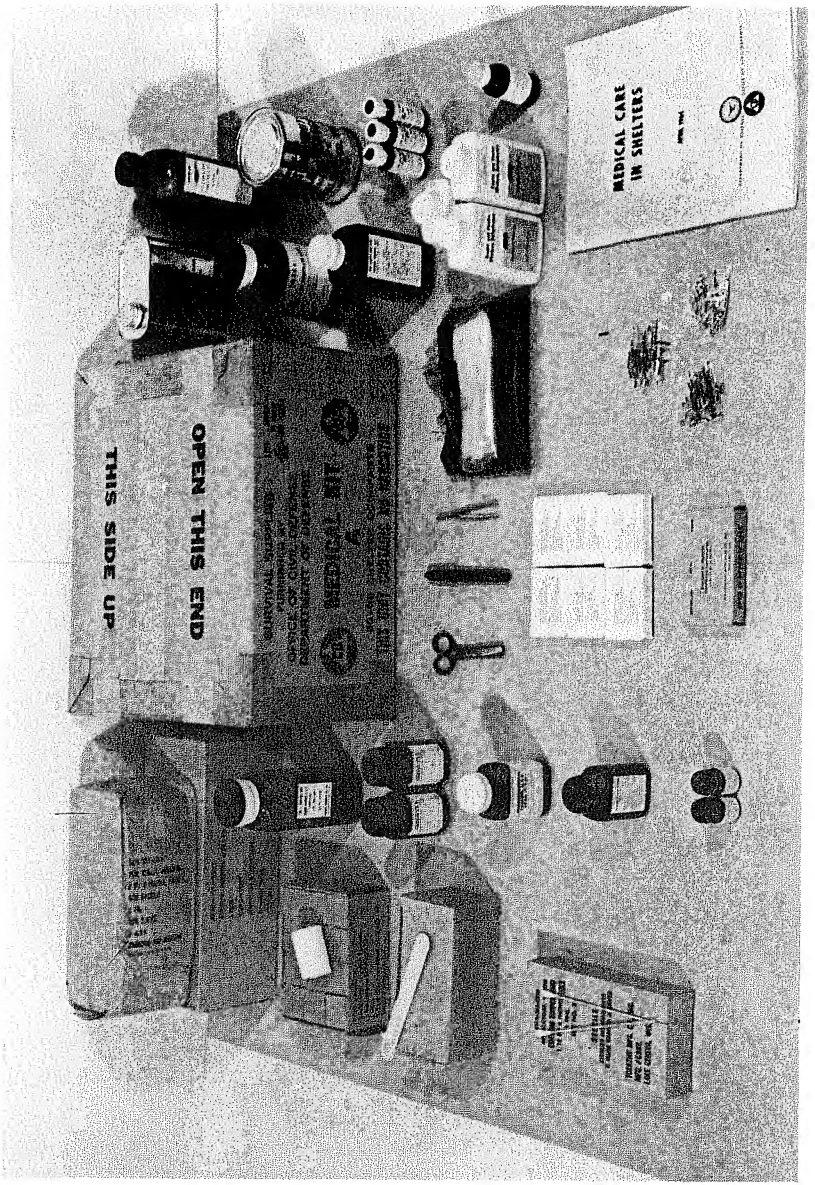


Figure 20.—Public fallout shelter medical kit A (designed to serve 50–65 persons).

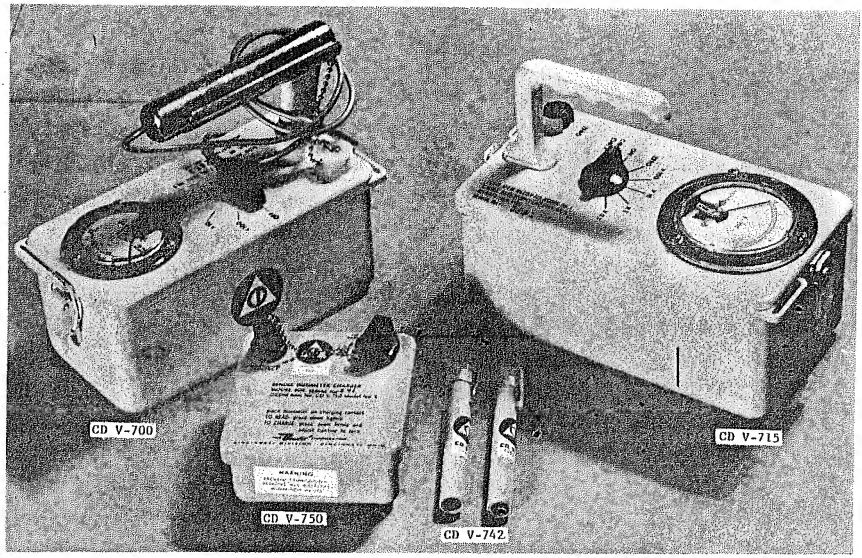


Figure 21.—Public fallout shelter radiation kit CD V–777–1.

1 CD V–700 (low range beta-gamma survey meter)
1 CD V–715 (high range gamma survey meter)
2 CD V–742 (dosimeters)
1 CD V–750 (dosimeter charger)

Except for one additional CD V–715 survey meter, the operational set CD V–777 furnished to radiological monitoring stations contains the same instruments as kit CD V–777–1.

Figure 22.—Public fallout shelter water container with polyethylene liner. Sealing with a portable heat sealing iron is an effective way of closing the liner, after lined container is filled with the proper amount of water.

Appendix 3

SLANTING TECHNIQUES

Every building provides a shield against fallout radiation to some extent. In the nationwide survey to locate public fallout shelter, millions of suitable shelter spaces were found in buildings, even though no consideration had been given to fallout protection when they were designed and built. Many other buildings surveyed would have provided reasonable protection, but there were weak points which nullified otherwise good protection. If such weak points can be detected during the initial design phase by someone knowledgeable in radiation shielding, maximum protection can be incorporated in new buildings with little or no increase in cost. The incorporation of fallout protection in this manner is called "slanting."

Many architects and engineers are now using slanting techniques in designing new structures. Major factors involved in slanting are:

1. *Location and quantity of window areas.*—Can window areas be reduced or sills raised to reduce exposure to radiation? (See fig. 23a.)

2. *Site conditions.*—Is the structure so located that maximum advantage is taken of mutual shielding from adjacent structures? Has consideration been given to the use of retaining walls, roof overhangs, or grading a slope away from the structure to minimize the effect of radiation from the ground? The inclusion of masonry screen walls or brick planter boxes will enhance and also increase the barrier shielding. It is also possible to improve the fallout protection by judicious site work and utilization of earth berms. (See fig. 23a.)

3. *Basement.*—Is it possible to depress the ground floor partially or completely below grade to reduce the effect of radiation from the ground? (See fig. 23b.)

4. *Entrances and exits.*—Have these been located to maximize the protection by baffles, or do they permit direct entry of ground radiation? Can stairwells be positioned so that they provide additional shielding at the ends of corridors and hallways? (See fig. 23c.)

5. *Interior partitions.*—Have these been placed to block radiation?

6. *Walls.*—Have dense, solid walls been used advantageously? Have hollow walls been filled with low-cost materials, where feasible? Has consideration been given to using reinforced concrete or concrete block construction in lieu of lightweight aggregate block or other

lightweight wall construction? Have low-cost opportunities been exploited, such as the use of hollow tile or concrete block filled with sand or gravel to provide additional mass in interior and exterior walls? (See fig. 23d.)

7. *Floors and roofs.*—Has a comparison been made of various systems, such as concrete slabs on precast T-beams or bar joists; composite floor systems, such as tile or terrazzo on concrete, or two-way slab design versus pan-joist construction? Cost differences may be negligible, but one system may provide significant additional shielding. The addition of a few inches of concrete topping to a precast concrete T-roof or floor-slab system will do much to enhance the protection afforded occupants. (See fig. 23e.)

8. *Architectural arrangements.*—Has maximum advantage been taken in arranging the building modules to provide a protected core area that can be used for shelter?

If the protective requirements are clearly understood, the architect-engineer will find many ways in which the protective characteristics of the building can be enhanced with little or no increase in cost and without sacrificing esthetics or functional efficiency. While maximum protection may not always be achieved, a higher level of protection can usually be attained.

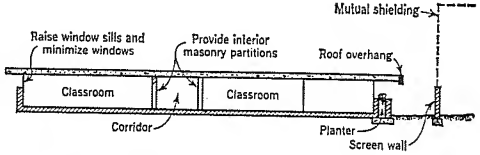
A new requirement now exists in the field of building design and construction—the requirement that a new building should protect its occupants aaginst fallout radiation, in addition to its other functions.

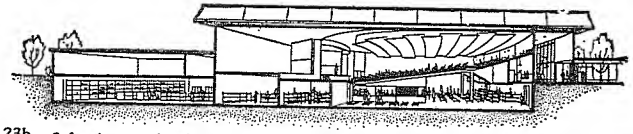
A large number of this Nation's architects and engineers are now knowledgeable in radiation shielding analysis and design, and are becoming skilled in the use of the new "slanting" techniques to maximize fallout protection in their current design projects.

New buildings can be designed and built with dual-purpose fallout protection at little or no increase in construction cost and without detracting in any way from the beauty or usefulness of the structures.

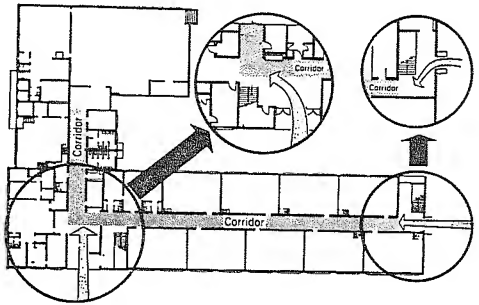
Designing buildings with maximum fallout protection is no longer a mere theory or an academic exercise. All over America today, more and more such buildings are being constructed.

23a.--Low-cost "slanting" techniques for barrier shielding include such features as screen walls, planter boxes, roof overhang, and raised windows.

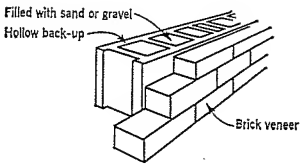




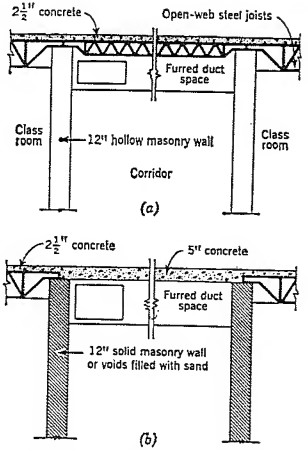
23b.--Cafeteria area placed beneath sloping auditorium floor provides additional fallout protection for a school at an increase of less than 0.2 percent in bulding cost.



23c.--First-floor plan of a typical elementary school shows that corridor areas offer best shelter potential. Their protective value is enhanced by relocation of stairwells and partial baffling of entranceways, shown by arrows.



23d.--Use of low-cost material to fill hollow tile provides additional mass in interior and exterior walls.



23e.--Normal construction can be revised to give added fallout protection. Minor structural changes brought mass of roof, which was 31 lb per sq ft, in *(a)*, up to 62 lb per sq ft in *(b)*.

Figure 23.—Examples of slanting techniques.

NUMBER 5030.21
DATE *April 27, 1962*

ASD(CD)

DEPARTMENT OF DEFENSE INSTRUCTION

SUBJECT: Advisory Committee on the Design and Construction of Public Fallout Shelters

References: (a) DoD Directive 5030.13, "Regulations for the Formation and Use of Advisory Committees"
(b) Executive Order 11007, "Prescribing Regulations for the Formulation and Use of Advisory Committees," February 26, 1962

I. GENERAL

A Department of Defense Advisory Committee on the Design and Construction of Public Fallout Shelters is hereby established to advise the Assistant Secretary of Defense (Civil Defense). The purpose, membership, and operation of the Committee are set forth below.

II. PURPOSE

The purpose of the Advisory Committee on the Design and Construction of Public Fallout Shelters is to:

A. Review and make recommendations on the operating problems of providing incentives for shelter construction and of effecting proper utilization of shelter space in existing buildings.

B. Provide means for effective communications relating to shelter design and construction between the Office of Civil Defense, Department of Defense and the membership of the associations named below.

C. Recommend methods of stimulating shelter construction through development of plans and designs, by reducing shelter construction costs, and by communicating to the building trades and building owners technical information conducive to shelter construction.

III. MEMBERSHIP

This Committee shall be representative of the American Institute of Architects, the American Society of Civil Engineers, the Associated General Contractors of America, Incorporated, the National Society of Professional Engineers, the Engineers Joint Council, and the American Institute of Planners. Total membership shall consist of 13 members.

A. There shall be two members from each of the six professional organizations named above. One of the two members shall be an officer, the other a staff member, of the organization represented.

B. One member, a full time, salaried Government official designated by the Assistant Secretary of Defense (Civil Defense), shall be Chairman of the Committee.

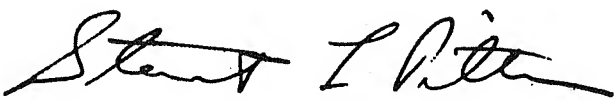
C. If a vacancy occurs on the Committee, it shall be filled in the same manner as the original appointment.

IV. OPERATION

A. The Committee shall be organized and operated in accordance with references (a) and (b) above.

B. The Chairman shall call each meeting of the Committee, and shall formulate the agenda of each meeting. He shall make provision for taking minutes of each meeting, and shall certify the accuracy of summary minutes thereof. He shall have the authority to adjourn any meeting whenever he feels that its continuation would not be in the public interest.

C. The functions of the Committee are solely advisory, and any determination of action to be taken, based in whole or in part on such advice, shall be made by the Assistant Secretary of Defense (Civil Defense).



STEUART L. PITTMAN,
Assistant Secretary of Defense
(Civil Defense)

MEMBERSHIP LIST

ADVISORY COMMITTEE ON THE DESIGN AND CONSTRUCTION OF PUBLIC FALLOUT SHELTERS

Meeting Dates—July 17, 1964 and January 15, 1965

Designee	*Name, Title and Affiliation*	*Address*
1. Chairman_____	Mr. James E. Roembke, staff director, Architectural and Engineering Development Division, Technical Services, Office of Civil Defense.	The Pentagon, Washington, D.C., 20310.
Representatives from the American Institute of Architects:		
2. Officer_____	Mr. John McLeod, board member, Washington Metropolitan Chapter, American Institute of Architects.	1705 DeSales St. NW., Washington, D.C., 20036.
3. Staff member__	Mr. William H. Scheick, executive director, American Institute of Architects.	1735 New York Ave. NW., Washington, D.C., 20006.
Alternate staff member.	Mr. Kenneth C. Landry, administrator of government relations, American Institute of Architects.	Do.
Representatives from the American Society of Civil Engineers:		
4. Officer_____	Mr. Howard G. Dixon, president, Howard G. Dixon, Inc.	284 Putnam Ave., Freeport, N.Y., 11520.
5. Staff member__	Mr. William H. Wisely, executive secretary, American Society of Civil Engineers.	345 East 47th St., New York, N.Y., 10017.
Alternate staff member.	Mr. D. P. Reynolds, assistant executive secretary, American Society of Civil Engineers.	Do.

Designee	*Name, Title, and Affiliation*	*Address*
Representatives from the Associated General Contractors of America, Inc.:		
6. Officer	Mr. John E. Healy II, John E. Healy & Sons, Inc.	707 Tatnall St., Wilmington, Del., 19801.
7. Staff member	Mr. William Dunn, executive secretary, Associated General Contractors of America, Inc.	20th and E Sts. NW., Washington, D.C., 20006.
Alternate staff member.	Mr. John K. Bowersox, director Building Division, Associated General Contractors of America, Inc.	Do.
Representatives from the National Society of Professional Engineers:		
8. Officer	Mr. John H. Stufflebean, president, National Society of Professional Engineers.	211 West Pennington St., Tucson, Ariz., 85701.
9. Staff member	Mr. Paul Robbins, executive director, National Society of Professional Engineers.	2029 K St. NW., Washington, D.C., 20006.
Alternate staff member.	Mr. Leo Ruth, vice president, National Society of Professional Engineers.	919 The Alameda, San Jose, Calif., 95126.
Representatives from the Engineers Joint Council:		
10. Officer	Mr. R. H. Tatlow, III, president, Abbott, Merkt & Co., Inc.	630 3d Ave., New York, N.Y., 10017.
11. Staff member	Mr. L. K. Wheelock, secretary, Engineers Joint Council.	345 East 47th St., New York, N.Y., 10017.
Alternate staff member.	Mr. Donald A. Buzzell, executive director, Consulting Engineers Council.	1155 15th St. NW., Washington, D.C., 20006.
Representatives from the American Institute of Planners:		
12. Officer	Vacancy	
13. Staff member	Mr. Robert L. Williams, executive director, American Institute of Planners.	917 15th St. NW., Room 800, Washington, D.C., 20005.

Appendix 5

CHEMICAL AND BIOLOGICAL DEFENSE

The OCD has tested mass production techniques for a protective mask. Should the need arise, these techniques could be made available to manufacturers. However, studies conducted for the Department of Defense indicate that the threat to the United States posed by chemical and biological agents is relatively less significant than that posed by the nuclear threat. Chemical agents are not considered a major strategic threat, as they are effective mainly if used against tactical targets of limited area. Although the possibility of employment of biological agents against population centers cannot be ruled out, neither a chemical nor a biological threat against the continental United States warrants, at this time, the attention and priority given to defense against the effects of nuclear weapons. But Department of Defense research on methods of detecting, identifying, reporting, and analyzing biologicals, as well as on methods of defense against them, will continue; meanwhile this potential threat is kept under constant review.

U.S. GOVERNMENT PRINTING OFFICE: 1966 O—207–163